

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

PERCIVAL SHELDON RIDSDALE, Editor

PUBLISHED MONTHLY

PRICE 40c A COPY—\$4.00 A YEAR

APRIL, 1921

CONTENTS

VOL. 27, No. 328

Editorial	195
What is Wrong With Alaska—By W. B. Greeley.....	198
With twelve illustrations.	
Animal Habitat Groups—By Barton Warren Evermann.....	209
With fourteen illustrations.	
Description of the Bird and Animal Groups.....	210
Famous and Interesting Trees—By James Ricalton.....	217
With eight illustrations.	
Young Birds and Birds' Eggs—By R. W. Shufeldt.....	225
With ten illustrations.	
Wooden Shingles or Substitutes—By Arthur Newton Pack.....	231
With thirteen illustrations.	
The Oldest Frame Building in America—By William C. Poole.....	237
With one illustration.	
Rejuvenating Pecan Trees—By O. B. Strayer.....	238
Boys' Reforestation Clubs in Louisiana.....	238
Silent Sentinels—By Hazel V. Paris.....	239
With one illustration.	
Activities of The American Forestry Association for March, 1921.....	240
Forest Recreation Department—By Arthur H. Carhart.....	241
Showing Henry Some Country—By K. D. Swan.	
With eight illustrations.	
Gems of Ruby Mountains—By August Rohwer.	
With three illustrations.	
Why Not Label Trees?—By Blanche C. Howlett.....	249
Forest Guides Department—By Solan L. Parkes, Editor.....	250
The Willow Patch—Poem by Bernard Flanagan.....	251
Black Locust Reclaims Washed Lands—By E. E. Miller.....	252
With four illustrations.	
Forestry Editorial Digest.....	254
Rate of Development of the Cones of the Norway Spruce—By J. Ben Hill.....	256
With one illustration.	
Save the Dogwood—By Inez M. Haring.....	256
Tree Stories for Children—Spirits in Trees—By Mary Isabel Curtis.....	257
Canadian Department—By Ellwood Wilson.....	258
Book Reviews.....	260
The Annual Meeting.....	262
Roadside Planting Endorsed.....	269
"Grove of the States".....	269
Forest School Notes.....	270
Free Trees for Residents of New York State.....	272

CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect.
Be sure to give your old address as well as the new one.

Publication Office, 522 East Street, Baltimore, Md.

Headquarters Office, 1214 Sixteenth Street, Washington, D. C.

Entered as second-class mail matter December 24, 1909, at the Postoffice at Baltimore, under the Act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Sec. 1103, Act of October 3, 1917, authorized February 27, 1920.

Copyright, 1921, by The American Forestry Association.



Decayed post of coal chute foundation.



Decayed intermediate sills and flooring of freight cars.



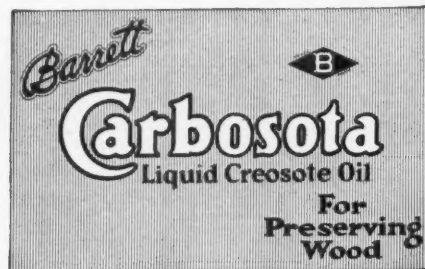
Decay is the greatest enemy of poles. Creosoting protects poles effectively.



Removing decayed roof boards over textile mill—the penalty for neglecting to protect the lumber against decay before erection. (Courtesy F. J. Hoxie, Eng. Assoc. Factory Mutual Fire Ins. Co., Boston, Mass.)



Wood Roof-Deck of Paper Mill creosoted by Open Tank process with Carbosota Liquid Creosote Oil. Dark ceiling is not a detriment.



The Cost of Doing Without

Practically every large industry pays out for maintenance of wooden construction huge sums which could be saved by using Carbosota Liquid Creosote Oil. The cost of doing without this effective and economical wood preservative unquestionably aggregates millions of dollars annually.

Because of its absolute physical fitness for application by non-pressure processes, Carbosota places the economy of wood preservation within the reach of each lumber user. Except in the cases where complete impregnation is required, such as piling, railroad cross ties, etc., Carbosota applied by Open Tank process (hot and cold bath treatment) or Surface treatments provides positive protection against wood decay.

A few of the many instances where the use of Carbosota will result in substantial savings, are—

Mine Timbers and lumber used for all underground and surface construction.

Railroad Lumber used for car repairs, platforms, freight sheds, fences, roundhouse roof-decks, outhouses and other similar structures.

Pole Lines—For the treatment of new poles and also for salvaging sound portions of old poles which are suitable for short pole lines and stubs.

Roof-Decks of paper mills, textile mills and other buildings where excessive humidity exists. By preventing decay, Carbosota makes wood the ideal roof-deck material.

Our service department is prepared to give expert technical advice as to the most practicable and economical method of using Carbosota in each individual case. This service is entirely free. Write to our nearest office, giving details of your problem, and we will be glad to furnish definite information.

(Green wood cannot be effectively creosoted by non-pressure processes. It should be seasoned. All framing, drilling of bolt holes, etc., should be completed before treatment. If this is impossible, two brush coats of Carbosota should be applied to all untreated surfaces exposed by subsequent cutting or drilling.)

The *Barrett* Company

New York	Chicago	Philadelphia	Boston	St. Louis
Cleveland	Cincinnati	Pittsburgh	Detroit	New Orleans
Birmingham	Kansas City	Minneapolis	Dallas	Nashville
Syracuse	Seattle	Peoria	Atlanta	Duluth
Salt Lake City	Bangor	Washington	Johnstown	Lebanon
Youngstown	Milwaukee	Toledo	Columbus	Richmond
Latrobe	Bethlehem	Elizabeth	Buffalo	Baltimore
Omaha	Houston	Denver	Jacksonville	

THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg
Vancouver St. John, N. B. Halifax, N. S.

AMERICAN FORESTRY

VOL. 27

APRIL, 1921

NO. 328

EDITORIAL

THE ASSOCIATION'S PROGRESS IN FORESTRY ASSURED

RAPID development in the ability of the American Forestry Association to further promote the cause of forestry is assured by important action taken at the Annual Meeting of the Association on February 25. This was the adoption of amendments to the by-laws which remove the danger of the Association ever passing under the control of special interests, a condition threatened on several occasions, and which assure for all time its policy of truly representing and creating public opinion.

The amendments make seven of the directors—including President Charles Lathrop Pack, permanent directors. All these men have been directors for the past ten years or more. They represent forestry, conservation, lumbering, paper manufacturing, banking, general business and education—interests so diversified that these men are particularly representative of the general public. The other eight directors will be elected by the members, who are now entitled to vote by mail or in person. This permits all to have a direct voice in the affairs of the Association, a much more democratic arrangement than that previously in effect, of allowing only those present at the annual meetings to vote. Rarely did more than 150 to 175 members attend these meetings. This is about one per cent of the membership.

Adoption of these provisions assuring a continued public service and public spirited policy also permit much better financial support of the Association than in the past. Certainty that the Association is removed from danger of control by special interests is an assurance to those who desire to aid in its work through substantial financial support that their money is contributing directly to the public good. This condition having been met, the Association will now proceed in its endeavor to secure a substantial endowment for educational work. It has already been assured funds for a national publicity campaign for forestry and for many improvements in its magazine and other publication. It is also to acquire a fine, commodious building on Sixteenth Street, Washington, D. C., as a permanent home, a gift to the Association from President Charles Lathrop Pack.

The Association is therefore now in a position to do more to promote forestry than ever before. It will continue, unhampered, its policy of truly representing the public. It will further its educational work to the limit of its resources. It will strive to greatly increase its membership, to extend its influence, to secure greater prestige, and to advance the whole cause of forestry in every way its capacity permits.

COUNTY CONSERVATION ASSOCIATIONS

CENTER County, Pennsylvania, has taken the lead in organizing an association of all those interested in promoting the conservation of the natural resources of the county. The plan of organization contemplates dividing the county into nine conservation districts, each of which has a series of seven committees dealing with the subjects of forestry, fish, game, wild flowers, song and insectivorous birds, recreation, and education. The Committee on Forestry, for example, is expected to interest itself in the general forestry movement, to encourage the planting of waste and idle lands, the proper care and development of farm woodlands and forests, and their protection from fire and other destructive agencies. It is also interested in promoting the planting

of shade trees along highways and in towns and cities and about schools and churches. Similar committees handle matters relating to the county as a whole.

The movement is of particular interest for two reasons; first, because by its organization in such small units it can enlist the interest and co-operation of practically the entire population of the county, and secondly, because it brings strength to each of the different phases of conservation by pooling the support of those interested in these various phases. A neighboring county is already organizing along the same lines and four other counties are considering doing so. Those responsible for inaugurating the plan in Center County are hopeful that it will eventually develop into a State organization, and it is not un-

reasonable to anticipate its extension to other States. Any plan that will bring together for united effort the great host of people who are interested in one or more

of the various aspects of conservation of our natural resources certainly has merit and should receive all possible encouragement.

"A LOOK FORWARD, NOT BACKWARD"

ONE of the noteworthy events of February in the forestry world was the celebration by the Society for the Protection of New Hampshire Forests of the twentieth anniversary of its founding. Twenty years is a relatively long period in the forestry movement in this country, and the Society has the distinction of being one of the pioneers in the work. In local affairs it has done much to encourage forest conservation by its unfailing support of progressive measures, and the acquirement of Crawford Notch by the State was chiefly due to its efforts. In the national field it may justly claim credit for having contributed materially to the passage of the Weeks Law providing for Federal acquisition of forest lands on the watersheds of navigable streams and for

the protection of such watersheds from fire in co-operation with the States.

The Society very wisely, however, refused to allow its two-day birthday party to dwell too exclusively on past achievements. The motto for the occasion, "A Look Forward, Not Backward," furnished the keynote for most of the talks. Colonel Greeley, who also addressed the New Hampshire Legislature and the Massachusetts House of Representatives, spoke on "A National Forest Policy," in his advocacy of which he is warmly supported by the Society. Altogether the celebration constituted a worthy celebration of twenty years of public service. AMERICAN FORESTRY hopes that the future of the Society will be even more prosperous than its past, and that both its record and its watchword may serve as an inspiration to others.

CONSERVATION BY WOOD USING INDUSTRIES

THE youthful Association of Wood-Using Industries, organized last summer, has ambitious plans. Its purpose "is to establish unity of aim and effort among all industries using wood with reference to their principal basic raw material, and to mobilize the influence and resources of these industries to protect and conserve the sources and utilization of this fast diminishing supply." One of its first activities was to assist in formulating the Snell Bill for a national forest policy. Now it is endeavoring to reduce waste in the utilization of wood through a Committee on Conservation and Standardization.

The primary object of this committee is to reduce so far as possible the enormous waste that now exists in the use of dimension stock. Just how enormous this waste may be is indicated by the statement of a prominent wood turner that it sometimes requires two tons of lumber to produce 400 pounds of handles. Much of the loss in this and other industries is due to the fact that practically all dimension stock is manufactured from plank rather than direct from the log. High costs of lumber and of transportation have so far failed to stop this tremendously

wasteful practice, which persists largely because there are no official standardized lists of dimension stock.

The standardization committee of the Association of Wood Using Industries has undertaken to remedy this situation. It hopes to do so both by securing the general adoption of standard sizes for the principal dimension requirements and by bringing about more careful and efficient methods of manufacturing. This is a far-reaching program of great significance. Industries using small dimension stock now consume some five or six billion board feet each year, or at least a sixth of the total lumber cut. It is probable that there is not one of these industries in which an equally good product could not be turned out with from 10 to 20 per cent less material, and some have even gone so far as to predict the possibility of meeting all requirements for small dimension stock from timber now wasted. Could a more effective means of promoting forest conservation be imagined? We hope that the efforts of the committee to bring order out of chaos, efficiency out of inefficiency, will be aided by the hearty co-operation of the wood-using industries in general.

WIDESPREAD INTEREST IN STATE FORESTRY

STATE forestry is on the eve of a remarkable development if one can judge from the interest being manifested throughout the country in various phases of State

forest legislation. Most of the legislatures are now in session, and in practically all of the timbered States, forestry bills already have been or are expected to be introduced.

Thus in the Northeast Maine is considering the regulation of cutting on private lands through the establishment of auxiliary State Forests. The New Hampshire legislature has before it bills providing for the leaving of seed trees on pine lands, for compulsory forest fire patrol, and for the disposal of slashings. Massachusetts is planning to continue its purchases of State forests and to acquire the picturesque Mohawk Trail. Connecticut is proposing to modify the present system of forest taxation and to enlarge the State Park Commission into the State Park and Forest Commission.

In the Central States, Indiana is endeavoring to improve its present fire protective system and to encourage timber production through tax exemptions. In the South, and reforestation, and also the adoption of a severance

tax similar to that already in force in Louisiana. In the Texas is considering the adoption of a comprehensive forest policy with particular emphasis on fire protection. Far West, California has established a State nursery, is co-operating with timberland owners in slash disposal, is planning greatly increased expenditures for fire protection and a revision of its present system of forest taxation, and is looking forward to the establishment of State forests.

These are but samples of the widespread interest which the States generally are manifesting in the protection and perpetuation of their forest resources. It is to be hoped that the movement will bear fruit in the enactment of a considerable number of progressive and effective forestry measures.

FOREST TAXATION IN CALIFORNIA

THAT California is alive to the desirability of some change in its present methods of forest taxation is indicated by the proposed amendment of its Constitution to enable the taxation separately of forest land and of the timber on such land. The specific resolution now before the legislature provides that "the legislature shall have power to provide by general and uniform laws for the taxation of land on which there is standing young timber or mature timber separately from the timber, and for the taxation of timber at the time it is cut or otherwise utilized only."

This is a long step in advance of present practice, which requires the taxation annually of both land and timber. In other words, the owner of a stand of young

growth which will not mature for a hundred years must pay taxes on it one hundred times before it is ready for cutting. What would the farmers think if a similar procedure were applied to them whereby a crop that requires one hundred days to mature were taxed one hundred times before it were harvested? The comparison is by no means far-fetched, for the forest is nothing more nor less than a long-time crop, the production of which takes years instead of days as is the case with most farm crops.

If forest production is to be put on a business basis, as of course it must be, it is imperative that the crop character of forests be recognized and their taxation arranged accordingly. In attempting to do this the pro-

FRUIT BOXES AND FORESTRY

HOW many lovers of oranges, apples, peaches, and other fruits realize that their supply of these delicacies is dependent on the practice of forestry as well as of horticulture? Nevertheless this is actually the case, and the explanation is simple. Fruits are almost universally shipped in wooden containers. Wood comes only from trees. And we are rapidly approaching the point where trees will no longer be available in sufficient numbers to meet even our present needs unless we practice forestry.

Boxes now absorb 15 per cent of the total lumber cut of the country. In Florida alone the growers of oranges and grapefruit already require more than 12,000,000 boxes a year to get their crop to market. If production continues to increase at the same rate that it has in recent years, by 1930 they will require 40,000,000 boxes, or some 220,000,000 board feet of lumber. In addition the truck-growers of the State require 13,000,000 boxes an-

nually and their demands are also increasing. These are but samples of the box requirements of farmers throughout the country.

Where is the lumber to build the boxes to come from? Florida fruit growers are already becoming alarmed at the steadily waning supply of southern yellow pine and are considering ways and means of meeting the situation. The answer is simple—to assure a permanent supply of timber by practising forestry. This involves the harvesting of present stands in such a way as to secure the renewal of the forest, the reforestation of lands now denuded, and the regulation of the cut so that the amount removed from the forest each year will equal approximately the amount grown. Producers and consumers alike are vitally interested in seeing that a definite and comprehensive program along these lines is put into effect without delay.

WHAT IS WRONG WITH ALASKA

BY W. B. GREELEY

FORESTER, U. S. FOREST SERVICE

THE development of Alaska is again a mooted question. It is one of many angles and, though much discussed, will still bear illumination. The situation of Alaska should be thoroughly and sympathetically understood by the people of the United States. The development of the Territory is a public responsibility, aside from reasons of general national interest, because 99 per cent of its area is public land and its resources are largely administered by Federal agencies. The problem of Alaska is fundamentally the application of common sense and efficiency to public business.

Alaska is pictured frequently as an empire whose growth has been arrested and whose resources have been put under lock and key by conservation theories. We are told that this young country, bursting with natural wealth, is beridden and shackled by the regulations of thirty-odd Federal bureaus, by conflicting or overlapping jurisdiction, by bureaucratic methods and delays, by long-range administration and red tape. For Alaska is de-

manded home rule, control of all her natural resources or a local administration of public property and interests which will replace the existing Federal agencies. Such assertions, often repeated, have created a common impression that Alaska is an intolerable muddle of Federal mismanagement. This conception of Alaskan affairs is wide of the mark but still contains enough truth to demand an unbiased and constructive inquiry.

After 53 years of American ownership, Alaska contains an estimated population of only 36,000 whites and 25,000 natives scattered over an area of 590,000 square miles. Alaska is passing through a slump. She lost ground during the war. Men left the Territory to enter the military service or munition plants offering high wages. The production of gold in Alaska dropped nearly 45 per cent between 1916 and 1919, and the labor employed in all forms of mining was cut in half. The number of men employed in placer mining dropped from 4,000 to 2,000 during the same period. Aside



ALONG THE COPPER RIVER, ALASKA

Heavy timber, rugged mountains, precipitous slopes, great glaciers, are all a part and parcel of the trip inland along the Copper River on which every turn brings to view a new scene which holds the eye.



Photograph by H. C. Fassett, U. S. F. C., Steamer Albatross.

HUBBARD GLACIER, YAKUTAT BAY, ALASKA

This great glacier along the glorious coast is but one of the many scenic wonders which await the traveler to our great northwestern territory.

from an increased production of copper, there were no war industries to make good these losses.

Considerable parts of Alaska are passing through the stage of the deserted mining camp. Ninety per cent of the population of Nome at her highest have left that great placer camp. The jest goes that the Government railroad reached Fairbanks just in time to bring the people out. Low returns or actual losses in mining low-grade gold ore threaten a further slump. Even the great salmon packing industry has become more and more precarious and less profitable owing apparently to a depleted stock of salmon.

The white population of Alaska seems to have dropped nearly one-third between 1915 and 1919. Yet it is generally agreed that the primary need of the Territory is not people. The Alaska Advisory Committee, appointed by the Secretary of the Interior, says in its report of June 11, 1920: "Under present industrial conditions it is undesirable to make special efforts to attract men without capital to Alaska. It would be a mistake to draw to Alaska a greater number of men than can be absorbed by the existing industrial development. What Alaska needs is the development of industries to give employment to labor."

In other words, Alaska needs capital first. With the exception of the prospector for minerals, Alaska is not yet a region which can be developed by the individual pioneer after the manner of our Western States. The Territory must have capital, first and foremost, to expand her forest, fish, and mineral industries. A demand for labor, a market for home-grown farm crops,

and better transportation service will follow in its train.

Let it first be said and reiterated that there is no resource in Alaska which is not open to exploration and use. The 20 million acres of National Forest have, since their creation, furnished every sawmill on the Alaskan Coast with logs, many fish canneries with their packing cases, and many mines with their timbers. They are the source of high-grade spruce lumber which is being shipped in growing quantities to the Central and Eastern States. They have been used freely by salmon canneries, fertilizer plants, fur farms—any form of industrial enterprise afoot—and for settlements and communities. Wood pulp plants are now being established in them on the strength of the supply of timber assured for long periods and at reasonable terms. The Alaskan coal fields have been open to development since the passage of the coal leasing law in 1914, and the oil deposits since the enactment of the oil leasing law, tardily indeed, in 1920. A number of water powers have been developed on National Forests and on other public lands in Alaska under old public land laws, notwithstanding their inadequacy. The water power act of 1920 provides a fair and adequate plan for the development of these resources on a par with coal, oil, and timber.

Has Alaska been over-conserved? Yes and no. The use of her coal and oil deposits was blocked for several years in each instance after the withdrawal of these resources from appropriation. Powerful interests did their best to kill the coal and oil leasing bills because they wished to kill the whole conservation program. Just as

15 years were required to enact an adequate water power bill, so was it impossible for a long period to overcome the opposition to any form of public ownership of coal and oil deposits so as to carry out the original plan of President Roosevelt for their use under Federal lease, in Alaska as elsewhere.

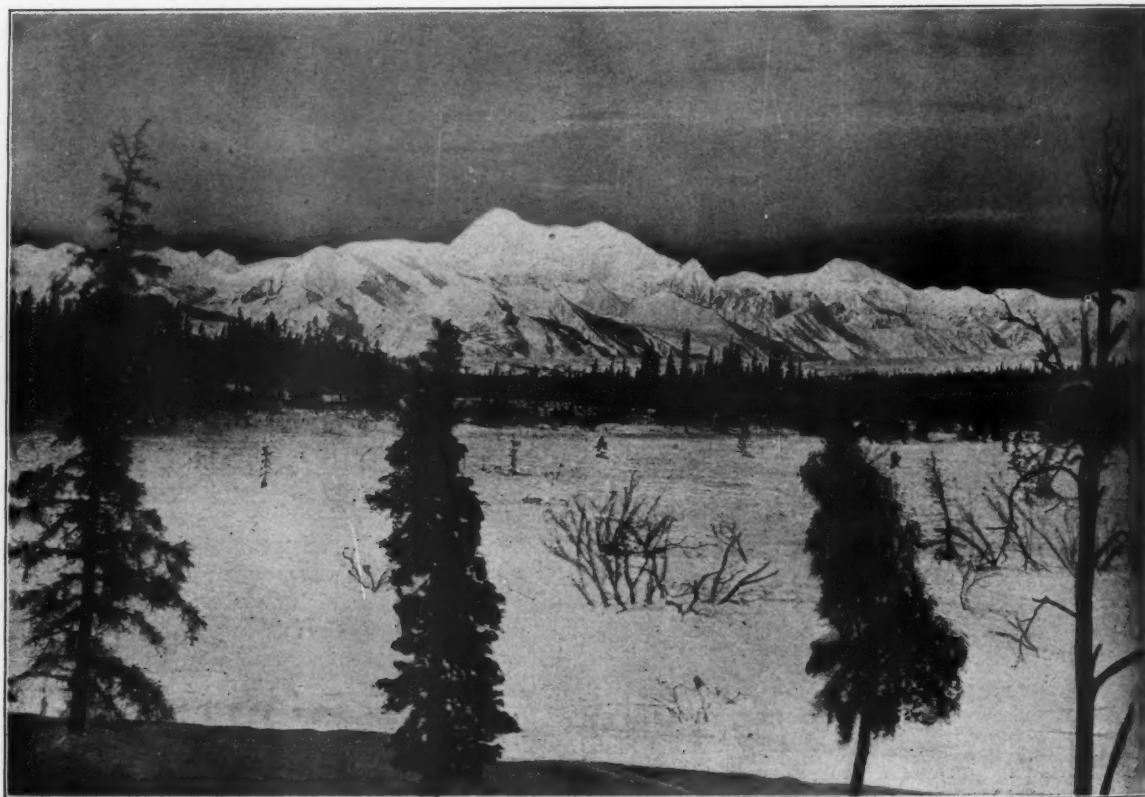
It is not necessary to return to old battlefields where the fight for the public interest was won. This chapter in the history of our natural resources happily is ended. What are the facts of today? Run over the imposing list of Alaska's resources—fish, metals, timber, marble, coal, petroleum, water power, fur, agricultural land—each of them is open to use, available to men of energy and capital. Additional laws are desirable, it is true, but on details not essentials. There is no handicap of any consequence upon men who are prepared to put their money into a real enterprise for developing any one of Alaska's resources. Let us dismiss once and for all the absurd notion that Alaska is padlocked.

What then has held back the development of the Territory? Primarily the stern facts of geography and trade—her situation on the farthest corner of the continent, the cost of transporting her products to possible markets, the value of gold and copper, the price of lumber and paper, the cost of labor, machinery and supplies. These are the things which hold in their grasp the economic development of Alaska—not Federal laws or regulations. Hundreds of thousands of potential farms in

the Yukon Valley are still uncleared and untilled, not because of administrative red tape, but because the returns from agriculture, primarily on account of the difficulty in reaching a market, do not attract homesteaders. The Forest Service tried for years to interest capital in paper manufacture in Alaska. The going value of paper before the war, the opportunities for obtaining raw material in well-developed regions elsewhere, and Alaska's handicap of distance turned the scales against her enormous pulpwood forests. Conservative business men regarded the venture as too hazardous; yet governmental red tape is still a popular explanation of the lack of a paper industry in the Territory. Changes in the paper market during the last three years have brought Alaska's pulpwood into demand, and the extension of the paper industry to her coastal forests is now assured.

Similarly with metal products. When the prices of gold and copper drop or remain stationary while costs of production rise, the mines operating low-grade ore must shut down. Labor is left without employment and towns without an industry. This is an important factor in the present ebb tide of Alaskan prosperity. Obvious as it is, the fact must be emphasized that the barometer of Alaskan development reflects and always will reflect primarily the world's demands for her products.

Many Alaskans are half blind to this basic fact. Alaska is impatient for immediate prosperity. The spirit of



OVER TWENTY THOUSAND FEET HIGH

A close-up view of famous Mount McKinley, Alaska, taken from Chultina Pass near Mile 281 on the Government Railroad. Many Alaskans say this railroad reached Fairbanks just in time to bring the people out.

the gold strike is still on the land. The feeling that "something is going to happen" is common, some industrial revolution, some new law that will work magic. The Territory is often called the "land of surprises." Her history is filled with the spirit of adventure, of large risks for big stakes. Men either went broke or made their fortunes. This state of mind is too restless and impatient to wait willingly for gradual economic development or to recognize the factors in world-wide commerce which determine its progress. Something must be wrong; something must be blocking the tracks. And that something is found in the way Alaska is governed from Washington. Hence the demand to "free" Alaska

necessary to prevent the early exhaustion of this great resource. Fortune-making from gold placers worked in the old one-man fashion must be given a very uncertain place in the future development of Alaska. There may still be undiscovered Klondikes, but at best they will contribute little to the enduring prosperity of the Territory.

Alaska has reached bedrock and must build up with stable and permanent industries. In this she must have the intelligent help of the nation. But both Alaska and the nation must get down to bedrock in their conception of the factors which control the development of the Territory. "Votes are not bread," in the words of President Taft; and empires are not built by passing a law or two.



DORR LAKE, REVILLAGIGEDO ISLAND, ALASKA

Note the well-timbered slopes which are common along the streams and lakes of Alaska, and which are so convenient in lumbering operations as the logs can be taken out by water.

from long-range regulation and restraint. Give Alaska local self-government. Give her the public resources within her own domains. "Permit Alaska to develop."

This point of view is fostered by the unending discussion of Alaskan affairs, by the reiterated public statements that Alaska is fettered, and by the frequent proposal of legislative panaceas which will bring prosperity over night. It is heightened by the slump through which Alaska is now passing.

By and large, much of the cream has been skimmed from Alaska. The days of quick and enormous profits from a small investment in a salmon cannery are probably over and restrictions upon the salmon catch are

The development of Alaska is bound to be a gradual process controlled by fundamental economic facts. The Territory has the resources. For the rest, hard work, patience, co-operation, and an enlightened and localized administration of Federal affairs are essential.

To what extent is Federal administration in Alaska muddled?

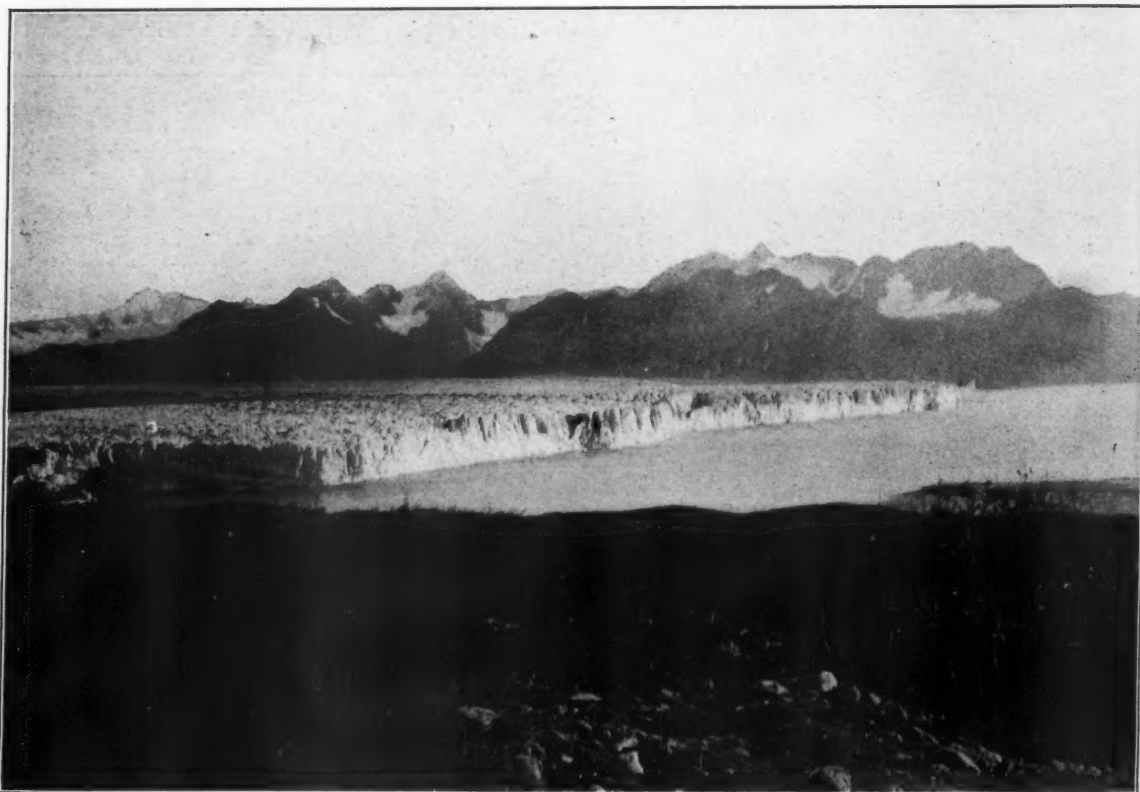
Not through the locking up of resources. This was true of coal and oil during the periods before it was possible to get leasing laws through Congress. It is true of no resource today.

Not through mere multiplicity of Federal bureaus, although certain of them having corresponding functions,

like the road building organizations, might well be combined. The range in Alaska's resources is enormous. When work was to be done, it was logical and necessary that the best equipped Federal agency should do it. A majority of the Federal bureaus, like the Agricultural Experiment Stations, the Weather Bureau, and the Coast and Geodetic Survey, having purely or largely investigative functions, have little or no bearing upon the administration of Alaskan affairs.

The greatest evil is long range administration. There is too much centralization of administrative authority

practically every step in the entry, survey, and acquisition of public lands must be referred to Washington for authoritative action. An entry cannot be officially allowed, proof of compliance with the law accepted, survey of the land approved, or patent issued by the officers of the General Land Office in Alaska although the whole process may involve less than five acres of the public domain. Every one of these steps requires separate and distinct reference to the Commissioner of the General Land Office and action by him. Many matters, indeed, after having been submitted to Washington by the Re-



MILES GLACIER, COPPER RIVER, ALASKA

The massiveness of this river of ice, ages old, must be seen to be appreciated, for no photograph and no pen can convey an adequate description of it to the reader.

in Washington, too many delays in getting things done. And Alaska is subject to too many inflexible regulations or cut and dried rules which are unnecessary or unadapted to her conditions.

To illustrate, the law may be cited which requires the advertising of any National Forest timber worth over \$100 in advance of its sale, desirable enough under other circumstances to promote competition. But in the hundreds of little timber sales along the Alaskan coast there is no opportunity for competition, the timber is invariably bid in by the original applicant at the price put upon it by the Forest officers, and the advertising requirement is simply an irksome delay and an unnecessary piece of red tape. This law should be changed. Again, under the highly centralized organization of the General Land Office as required by the Federal law,

ceiver of the Land Office in Alaska, are referred back to another officer in the same town for examination and report before final action can be taken. Is there any fundamental reason why public lands in Alaska should not be entered, surveyed, and patented under the authority of a representative of the General Land Office in the or cut and dried rules which are unnecessary or unadapted to her conditions.

Under long standing interpretations of various instructions and decisions dealing with the survey of homestead entries, but recently modified, the presence of a single salmon at spawning time in a stream fordable by a child debarred the homesteader from including both banks in his entry. More than one homesteader has given up a well-improved claim in disgust when he found that this requirement would limit the land which he might enter to



RAILS PIERCE THE WILDS OF ALASKA

Along the banks of the winding Copper River run the tracks of the Copper River and Northwestern Railroad, a trip along which is filled with scenic wonderments,



IT IS POSSIBLE TO SEE THIS BY RAILROAD

It will not be long before Alaska is so well opened up by rail, and river and road, that tourists will be able to see with ease and comfort much of its wonderful scenery.

one bank of an insignificant brook. Much of the agricultural land in southeastern Alaska is limited to narrow valleys along streams where this rule has been a great discourager of settlement.

The Forest Service, having the advantage of a young organization with few details of procedure fixed by statute, has been able to decentralize the administration of the National Forests in Alaska as elsewhere. Ninety per cent of the National Forest work in Alaska is handled finally by the resident District Forester and Supervisors, including practically all uses of National Forest lands and all ordinary sales of timber. With the exception of matters dealing with land titles, where the centralized administration of the General Land Office compels reference to Washington, only the most important transactions like large pulp sales or power projects require approval by Washington authority.

Aside from long range administration, the worst difficulty in the administration of Federal affairs in Alaska, there are cases of conflicting or incomplete jurisdiction which have not yet been ironed out. The Forest Service, for example, is in charge of 20 million acres of National Forests along the coast, including the best commercial timber of the Territory; yet it has no duties in

relation to over 50 million acres of forest land in the interior of Alaska where the fire hazard is much more serious and actual fire losses are large. Fur farming, one of the young but promising industries of the Territory, may be conducted on National Forests under a very simple form of permit obtained from the local Supervisor at a nominal charge. On the open public lands of Alaska there is no law which permits leases of this character and fur farming is not undertaken at all or is conducted in trespass with no protection against eviction. In some matters also, recognized elsewhere as under the jurisdiction of the States, powers have been retained by Congress or the Federal Departments which might better be given to the Territory of Alaska.

Such administrative conditions are illogical, unnecessary, vexatious, and at times unjust. By all means should they be corrected. But the sum total of their effect upon the development of Alaska is secondary and unimportant. They have not held back the exploration and use of any of her resources. Let us give them due weight, but not lose our perspective. The development of Alaska is determined by business facts. The full development and use of her resources will come about only as fast as economic conditions warrant. Administrative methods



WHITE WATER BAY, ADMIRALTY, ALASKA

A boom of logs cut from the steep mountain side typical of much of the Alaskan Coast. Here the timber and pulpwood supply will add to the amount needed in Canada and the United States.

and conditions may aid or retard, but cannot solve the economic destiny of Alaska.

A common sense public policy toward Alaska would seem to require action along three lines. First, we should anticipate that sooner or later Alaska will be qualified for Statehood and, as rapidly as practicable, we should give her control of the local affairs which in our system of government come under State jurisdiction.

In the second place, the national interests in Alaska should be administered by a field staff in the Territory itself. Each bureau or department having functions in Alaska should place them in charge of a resident officer,

given adequate authority and discretion by his own department, to the investigation of special needs or problems of the Territory with joint recommendations to Washington on Federal policy or legislation. Thus can the evils of long range administration be overcome, but without impairing fundamental national policies for the conservation of basic resources and without shutting Alaska off from the effective help of each Federal Department in developing resources in which that department represents the organized experience and technical skill of the country. And finally, the people of the United States from the direct adjustment of administrative duties,



SAWMILL AND LOG POND, KILLISNOO

The sawmills, pulp and paper mills, fish canneries, and the mines in Alaska all draw their lumber from the National Forests.

endowed with the maximum authority possible to act on the ground and with large discretion in applying Federal statutes to Alaskan conditions. Only transactions of the highest importance, the larger questions of policy, and appeals from local decisions should come to Washington. Then let these responsible Federal officers, together with the Governor of the Territory and two or more citizens representing her commercial interests, form a sort of Alaskan Cabinet, charged with the duty of tying together the different Federal activities, ironing out conflicts, overlaps, or omissions, and working out the best measures for the all-round development of Alaska. The functions of such a council would range which would be possible in many cases if each member is

States should recognize that Alaska is their greatest undeveloped physical asset, that they owe it to Alaska and to themselves to develop her resources adequately, and that while her economic progress will be governed primarily by business factors no practicable or reasonable form of Federal aid should be withheld.

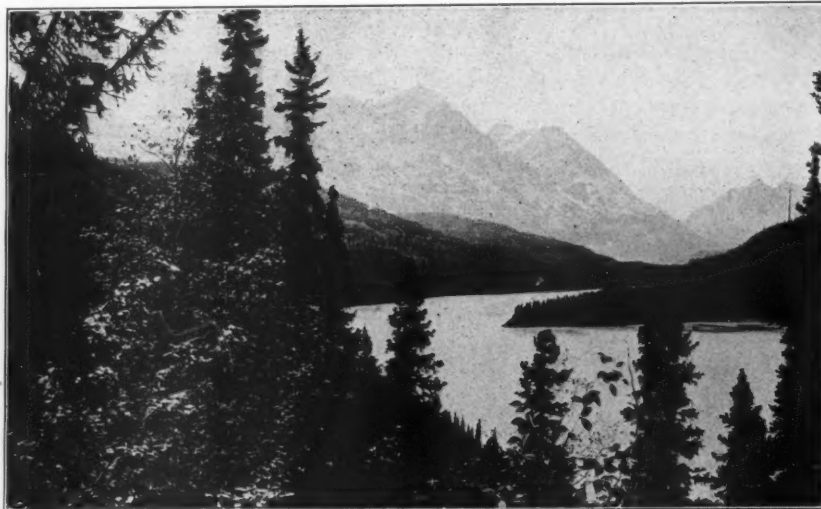
This calls especially for liberal aid in developing transportation, the lack of which is one of the greatest present handicaps of the Territory. Adequate marine transportation for Alaska is a knotty problem which only an aggressive Federal policy can solve. The completion of the government railroad and its administration as a developing rather than cost paying enterprise are of obvious necessity. To complete the needed groundwork

transportation, provision should be made for a comprehensive plan of highways constructed under Federal appropriations. The Federal government should also appropriate liberally for investigating the various resources of Alaska, assembling the facts needed for their exploitation, and bringing these facts before business interests by whom commercial development may be brought about. This applies particularly to mineral resources, hydro-electric power, pulp woods, deep sea fishing, agricultural lands and stock raising, including reindeer. And finally the requirements governing the commercial development of Alaska's resources, like her coal, oil, and timber, which have been withheld from private appropriation, must be reasonable and adapt-

ed to the conditions in the Territory. It is entirely practicable to encourage private enterprise in developing the resources of Alaska to the extent that the present-day commerce of the world demands, without sacrificing public interests.

An effort is now being made to create for Alaska a local Commission, or Development Board, which would take over the duties and authority of the various Federal executives together with the administration of all public resources in Alaska, working solely under the direction of the Secretary of the

Interior. This proposal may well be challenged. After all, the national interests in Alaska are paramount. Alaska represents, in her marine fisheries, her enormous agricultural areas, and her resources for growing meat pro-



SPIRIT MOUNTAIN AND COPPER RIVER ALASKA

There is considerable untouched forest along the sloping shores of the Copper River. In the distance is seen the towering peak of Spirit Mountain.

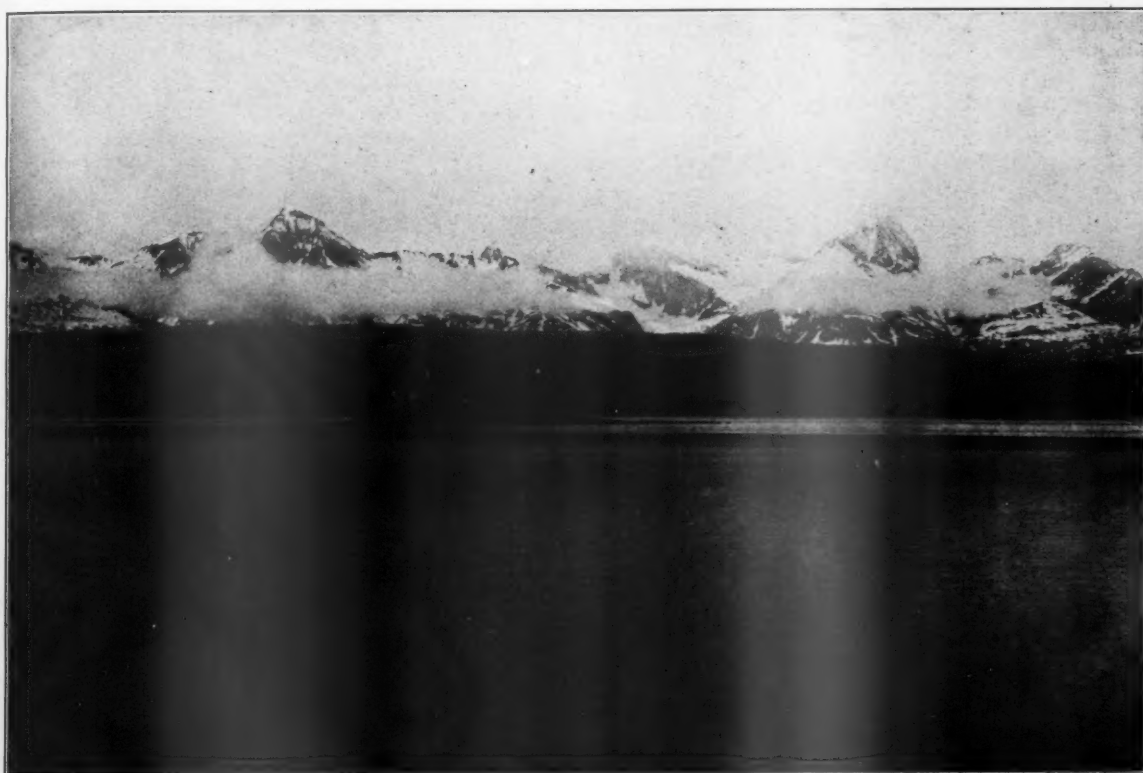


RUGGED SCENERY IS TYPICAL OF ALASKA

Great mountains, big glaciers, fine waterfalls, wonderful rivers and lakes, a wonderful sea line all aid in making Alaska a land of scenic thrills to every visitor whether on pleasure or business bent.

ducing animals, one of the great food sources of the United States. In her vast forests lies a practical solution of our paper shortage. The United States has painstakingly, by many years of effort, built up national policies for the use of publicly owned timber, publicly owned sources of food, coal and oil resources, water power, and migratory birds, from the standpoint of public welfare in the long run. It has built up specialized organizations handling these varied resources with the best technical experience and skill the country affords. Should it now, by one stroke, cut off a vast region containing one-sixth of our total area from the uniform and consistent application of these

sary because the same results can be accomplished by a decentralized administration of national affairs in Alaska. It is dangerous because it means a partial breaking up of the effective and uniform execution of vital public policies for dealing with natural resources. Let us rather develop Alaska in harmony with American policy at all points. Make her a State as soon as she is qualified. Give her as rapidly as may be the local powers that go with Statehood. At the same time handle permanent national interests in Alaska as they are handled elsewhere, both during her territorial apprenticeship and after she becomes a State, preserving the same policies and uni-



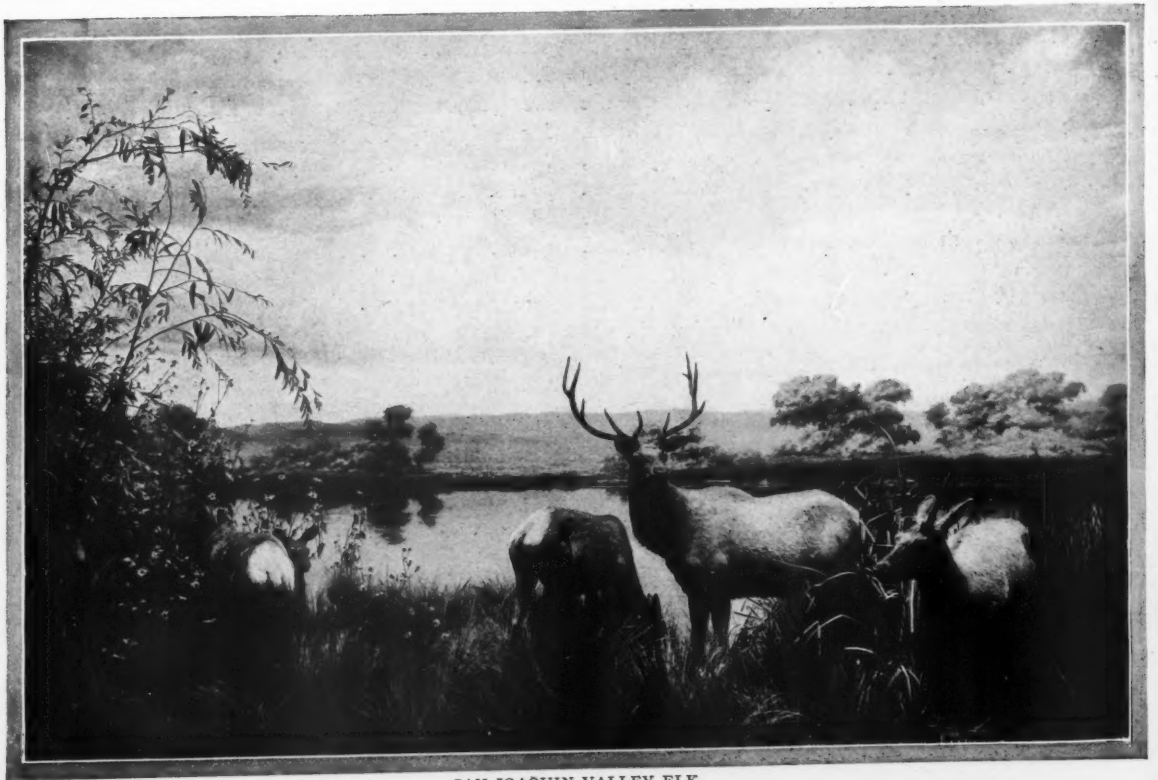
A SCENE ALONG THE ALASKAN COAST LINE

The ocean trip to Alaska is one of constantly changing scene and there is so much worth seeing that one begrudges the hours of darkness and of sleep. This bit of scenic wonderland is on the southern coast of the territory.

public policies by the specialized organizations created for the very purpose of their accomplishment? I think not. And from the standpoint of Alaska herself, in order to bring about the most effective development of her resources, it would be unwise to cut her off from the direct application of the energies and from the technical and financial resources of several great Federal organizations which are experts in doing the very things that Alaska needs to have done.

The Development Board plan for Alaska is unneces-

sary because the same results can be accomplished by a decentralized administration of national affairs in Alaska. It is dangerous because it means a partial breaking up of the effective and uniform execution of vital public policies for dealing with natural resources. Let us rather develop Alaska in harmony with American policy at all points. Make her a State as soon as she is qualified. Give her as rapidly as may be the local powers that go with Statehood. At the same time handle permanent national interests in Alaska as they are handled elsewhere, both during her territorial apprenticeship and after she becomes a State, preserving the same policies and uni-



SAN JOAQUIN VALLEY ELK



NORTHERN BLACK-TAIL DEER

ANIMAL HABITAT GROUPS

BY BARTON WARREN EVERMANN

DIRECTOR OF THE MUSEUM OF THE CALIFORNIA ACADEMY OF SCIENCES

THE modern natural history museum has come to regard itself, and to be regarded by the public, as an educational institution, working in co-operation with the public and private schools, for the good of all the children, as well as adults, who can be brought within its influence. To justify its existence, a public museum must be of real service not only to investigators but to the general public as well.

The investigator's needs are met by furnishing facilities for research which will result in the advancement of knowledge and its diffusion among men.

The other function of the public museum is that of usefulness to the public in educational ways. This function has not always been realized or received attention; indeed, there are museums here and there that are no more in touch with the world of today than are the fossils, whether dead or living, which they contain. Not until recently has this function been appreciated or received much attention; but this obligation to the public is now the dominant and controlling thought in many museums, great and small. Perhaps the greatest advance in recent years in making museums really educational has been in the installation of exhibits of animals and plants or other natural objects.

In the first place, the buildings and their included exhibition halls are designed and constructed with special reference to the most effective display of the particular kinds of exhibits to be installed. The problem of proper lighting has, apparently, received but scant consideration in the past. The exhibition halls in the old type of museum building were lighted by means of numerous large windows on two or more sides; the exhibits were placed in cases with glass fronts and ends, placed against the walls between the windows, or in rectangular cases with glass on all four sides arranged with mathematical precision in rows across the hall. The light outside the cases being stronger than that in them, very annoying reflections resulted. All sorts of objects elsewhere in the room, particularly those white or light in color, and, of course, the visitor himself, could be seen reflected from the case and were seen quite as plainly as the objects in the case; all of which was very confusing. This difficulty has been met in the modern natural history museum by doing away entirely with windows; all the lighting is by means of skylights, those over the exhibits letting in more light than those over the visitor, with the result that annoying reflection is reduced to a minimum; and by slightly tilting the plate-glass fronts of the exhibition cases, the reflection is entirely avoided. Artificial lighting is also provided for in the same way, so that the exhibits can be lighted at night and on dark days.

The next important advance is in the type of exhibit. The improvement has been especially marked with habitat or ecological groups. Wonderful strides have been made in recent years in the art of taxidermy and museum installation. Formerly, the birds, mammals or other animals to be shown were, as Director Lucas of the American Museum of Natural History has well said, most literally stuffed, then fastened to flat boards or perches of the jig-saw period of architecture, after which they were placed in long rows in glass cases in which, as already stated, the visitor saw himself quite as distinctly as he saw the animals meant to be shown. There were no rocks, plants, shrubs or other accessories to indicate in any way the natural environment in which the animals might be found when alive. Now, if the object to be exhibited is some animal, the species is shown as a group or family, a pair of adults, male and female, the usual number of young, and perhaps some additional young of different ages; the nest, if a bird, or perhaps the den if a mammal,

and the whole group set down among real trees and shrubs, annual plants, grass, rocks and sand, and other objects which together make up a bit of just such landscape as one would find the animals in should he seek them alive and in the wild. Of course, only a limited amount or number of units of the actual environment can be shown by means of real objects; but the setting is made more complete by means of a painted background which joins the real in such a way as to make it difficult, if not impossible, to tell where the real ends and the painting begins.

Of institutions that have attained remarkable success in the installation of habitat groups of mammals and birds, the California Academy of Sciences merits special mention. The new Museum of the Academy is located in Golden Gate Park, which Superintendent John McLaren, with his wonderful genius for landscape gardening and ability to combine wild nature with artistic beauty, has made what foresters and others regard as perhaps the most beautiful park in all the world. The first unit of this Museum was recently completed and opened to the public. Two important parts of this building are the California Mammal Hall and the California Bird Hall. The former is 180 feet long by 60 feet wide; the latter 140 feet long and 60 feet wide. In the mammal hall provision is made for 15 large mammal groups, four groups of intermediate size and 22 small panel groups. The cases are built in the wall on the opposite sides of the long hall. The large ones are each 25 feet long, 13 feet deep, front to back, and 18 feet to the ceiling glass. The back of the case is curved, its length being 40 feet.

The taxidermist in nearly every instance went to the place where the animals were collected, studied the environment and collected the accessory materials such as rocks, sand, shrubs, flowers, etc., needed in the composition of the group. The artist accompanied the taxidermist and he too, studied the scenery and made his field studies or sketches for guidance in painting the finished background. Through co-operation in this way and exchange of views, in other words, by means of team work between the taxidermists, artist and director of the Museum, really remarkable results have been attained. My aim, as director, has been to make these groups as true to nature, realistic and educationally valuable as possible. Not only has scientific accuracy and value been kept in mind, but the popular educational purpose of the exhibits has been kept constantly in view. Nor has the esthetic and artistic value of the exhibits been forgotten. And still another important consideration has not been forgotten, and that is the preservation and conservation of our wild life. In the selection of species to be exhibited and in the descriptive labels this question has been constantly kept in mind.

It is not possible to convey by means of photographs an adequate conception of the beauty of these groups, but the reproductions in this issue of *AMERICAN FORESTRY* will give some idea of their character.

That these exhibits are appreciated by the public is evidenced by the comments of the visitors of whom there have been more than a million since the Museum opened.

The mammal groups were prepared under the immediate direction of Mr. John Rowley, assisted by Mr. Paul J. Fair and Mr. Joseph P. Herring; the bird groups by Mr. Fair, assisted by Mr. Arthur L. Reed and Miss Olive E. Cutter. The backgrounds of these remarkable groups were painted by several different artists—Charles Abel Corwin, Charles Bradford Hudson, Maurice G. Logan, and Worth Ryder. All the work was done under the supervision of the Director of the Museum.

DESCRIPTION OF THE BIRD AND ANIMAL GROUPS

San Joaquin Valley Elk.—This beautiful animal, sometimes known as the Tule Elk or Dwarf Elk, formerly ranged in vast numbers through the San Joaquin-Sacramento Valley. Only a few hundred now remain. That the species is not entirely extinct is due to the foresight and interest of the late Henry Miller, founder of the great cattle company of Miller and Lux. In the early 70's, when only a few individuals were left, the herd made its last stand on the Kern County ranch of Miller and Lux. Mr. Miller instructed his cattle men not to disturb the elk in any way. His instructions were carried out and now the herd is in a very prosperous condition.

Northern Black-tail Deer.—This is the deer which is found chiefly in the chaparral or more open forests of the Coast Ranges north of San Francisco. The animals shown in the exhibit were obtained in Mendocino County, California, where the species is still abundant in spite of the ravages made upon it by the mountain lion, its worst enemy. The bucks and does are not usually found together in summer, but for exhibition purposes the young and both sexes are shown in the group.

Farallon Islands Bird Group.—The Farallons are a group of small rocky islands lying thirty miles off the Golden Gate. Thousands of sea birds resort to these islands to lay their eggs and rear their young. In the habitat group is shown one of the bird rookeries at the breeding season.

Desert Bird Group.—The desert is by no means devoid of attractions. After the winter rains the few shrubs put forth a profusion of beautiful flowers and a multitude of annual plants spring up. Then many species of birds, some of them being among the most brilliantly colored birds in the United States, build their nests in the palo verdes, yuccas, mesquites, cacti, and ocatillas. A number of desert species are shown in the exhibit, the scene representing a bit of the Colorado desert near the Salton Sea.

San Joaquin Valley Water-fowl Group.—About sixty-three species of ducks, geese and swans have been recorded as occurring in North America. More than forty of these have been taken in California; several, however, are mere stragglers and are rarely seen. The San Joaquin Valley has long been known as one of the most famous of these winter resorts of water-fowl. Late in August or early in September the flocks begin to arrive. By December most of the species have appeared, some of them in enormous numbers. Among the most abundant are the Sprig, Shoveller, Green-winged Teal, and the Snow, White-fronted, Hutchins, and Cackling geese. As many as 20,000 of some of these birds may be seen at one time. In the exhibit twenty-five species of ducks, six of geese, one swan, one coot and one crane are represented. The time is in February and the hour just as the sun is setting beyond the Coast Ranges at Pacheco Pass. Various species of water-fowl are shown in the foreground under natural surroundings, and a flock of white-fronted geese is just arriving.

Northwestern Black Bear.—Until recently only three or four species of bears were recognized in America, but now Dr. C. Hart Merriam, the greatest living authority on the subject, has described no fewer than forty-nine new species of grizzly and brown bears; and there are doubtless more to follow. In California, as elsewhere, the black bear may be either black or brown, or even cinnamon. Young of two color may occur in the same litter, and the parents may be both black, both brown, or one black and the other brown.

California Condor; California Vulture.—It is only in the wildest, most inaccessible regions of the rugged coast ranges that Condors may be seen, except occasionally when they descend to the canyons and valley in search of food. A hole or cave in some high cliff is selected for a nest. Only one egg is laid. The

young does not reach maturity until two or three years old. The California Condor is the largest flying bird in America, if not in the world; it is even larger than the great Condor of the Andes. It may be readily distinguished by its immense size and the large white patch which shows under each wing as the bird soars overhead. It is a scavenger, feeding on dead animals of various kinds such as cattle, horses, hogs and sheep. So useful a bird is it that the law imposes a severe penalty upon anyone who kills any Condor or destroys its nest or eggs.

California Mountain Lion.—The mountain lion, panther, "painter," cougar, or puma, as it is variously called in different parts of its habitat, is still quite abundant in the mountainous districts of California, particularly in the Coast Ranges north of San Francisco. It is the largest of the North American cats, and is very destructive to deer, elk, and various domestic animals. It has been estimated that each lion in California destroys annually on an average one deer a week. Assuming that there are 1000 lions in the State, doubtless an under-estimate, this means the destruction of at least 52,000 deer annually.

Northern Mule Deer.—The exhibit shows a group of the mule deer as they appear in winter in the northern coast mountains of California, where they frequent the spruce forests. The northern mule deer is one of the largest of the family and is, withal, a beautiful animal. The artist, Charles Abel Corwin, has done remarkably well in blending the background with the real objects in front. Can you find the line of union?

White Pelican Group.—On Anaho Island in Pyramid Lake, Nevada, is a breeding colony of about 10,000 of these interesting birds. This scene represents a small portion of the colony as it appeared in June, 1917. There are similar breeding grounds at Buena Vista Lake in Kern County, at Eagle Lake in Lassen County, and at the Klamath Lakes, California. The White Pelican usually nests on the ground, while the Brown Pelican often nests in bushes or low trees. The number of eggs is usually two or three, sometimes four or five. The eggs hatch in about twenty-nine days. Note how helpless the newly hatched young appear; also the way the young are fed. Note also the "centerboard" on the bills of some of the adults; this drops off soon after the breeding season begins.

Desert Mountain Sheep.—In the desert mountains and their included canyons and small valleys is found in southern California this interesting sheep or big horn. The animals shown in this group came from near San Jacinto Peak in southern California, where the species is still fairly common. In a region where vegetation and water are so scarce, the resident animals have learned to make the most of the situation and feed upon almost any sort of plant they may find. The barrel cactus is, to them, one of the most useful plants, the pulpy interior furnishing them with both food and drink.

Antelope or Pronghorn.—The Pronghorn or Antelope formerly ranged in immense numbers over the plains and valleys of North America west of the Mississippi River from Mexico to Canada. In California great herds ranged throughout the Sacramento and San Joaquin valleys and in other valleys to the north, east and south. As a result of persistent persecution and slaughter for their hides and meat, these animals have, in most parts of their range, been entirely wiped out. In southeastern Oregon and northwestern Nevada they are still fairly common. In California isolated bands, each consisting of a few individuals, are still left. The Pronghorn is the only member of the hollow-horned animals which annually sheds its horns. In the Pronghorn, however, only the outer shell or sheath is shed, and not the entire horn, as the deer and elk. The Pronghorn is also unique in not possessing dew claws or accessory hoofs on the backs of the feet, as in deer.



FARALLON ISLANDS BIRD GROUP



DESERT BIRD GROUP



SAN JOAQUIN VALLEY WATER-FOWL GROUP



NORTHWESTERN BLACK BEAR



CALIFORNIA CONDOR; CALIFORNIA VULTURE



CALIFORNIA MOUNTAIN LION



NORTHERN MULE DEER



WHITE PELICAN GROUP



DESERT MOUNTAIN SHEEP



ANTELOPE OR PRONGHORN



THE BANYAN TREE AT SINGAPORE

This shows the main trunk of the tree only. On an island in the Nurrubudda River is a larger tree with 350 large trunks and 3000 small ones under which an army of 7000 soldiers has encamped.



THE AERIAL TRUNKS OF THE GREAT BANYAN TREE AT CALCUTTA, INDIA

It is claimed that this tree holds the world's record for size. It has a central trunk fifty feet in circumference and about two hundred progressive trunks. The Hindus have a great reverence for the banyan tree, and because of its overshadowing beneficence, it is regarded as a symbol of the Deity.

FAMOUS AND INTERESTING TREES

BY JAMES RICALTON

(WITH PHOTOGRAPHS BY THE AUTHOR)

THE BANYAN TREE

THE banyan tree (*Ficus religiosa* or *Ficus Indica*) in its scientific name signifies sacred fig or Indian fig. It is known most widely on account of the peculiar form of its growth, its multiple trunks extending latterly until it covers great areas of ground. Unlike other trees, it not only sends out roots from roots, but roots are sent out from the branches downward until they reach the ground. These aerial roots become trunks and send out lateral branches and this progression is continued for almost endless periods of time.

This ever-continuing renewal of trunk brings a constant supply of fresh young sap and nutriment to all parts of the tree. On account of this unending reproduction of itself, the tree is exempt from decay, and its duration may be counted in milleniums. Extending its branches outward and not upward, it is not a high tree, yet it is a forest in itself, the haunt of birds and monkeys, who feed on its fruit, a sort of small bastard red fig the size of a cherry.

The rays of the tropical sun cannot penetrate its thick foliage. Fakirs and anchorets often seek religious solitude in its deep and grateful shade. Temples and pagodas are built in the neighborhood of this sacred tree.

A remarkable tree of this kind is to be seen on a small island in the Nurbudda River in Western India; even after much of it

has been washed away by river torrents it still measures 2000 feet in the circumference of its manifold trunks.

An army of 7000 soldiers has encamped under it. It has 350 large trunks and 3000 smaller ones. Solemn festivals are held under it when thousands of votaries gather from every part of the vast empire. English gentlemen often camp for weeks under this delightful pavilion. At times when not inhabited by human devotees it is the rendezvous of peacocks, wood-pigeons, and multitudes of feathered songsters, and families of monkeys, also flying-foxes or bats that measure six feet from tip to tip. This wonderful arboreal growth not only furnishes shelter but sustenance to these denizens of the jungle. Another great banyan tree claiming a world record for size, may be seen in the botanical gardens at Calcutta. It has a central trunk over 50 feet in circumference and about 200 progressive trunks. The ground beneath is kept clean, and its umbrageous shelter is a halting place for visitors and a paradise for picnics.

The Hindus have a great reverence for the banyan tree, and because of its long endurance, its outstretched arms, its overshadowing beneficence, it is regarded as a symbol of the Deity. Seated under the wide-spreading canopy of this marvelous tree one can look in every direction through vistas of graceful trunks and contemplate nature's vegetable plan of endless renewals and eternal youth.



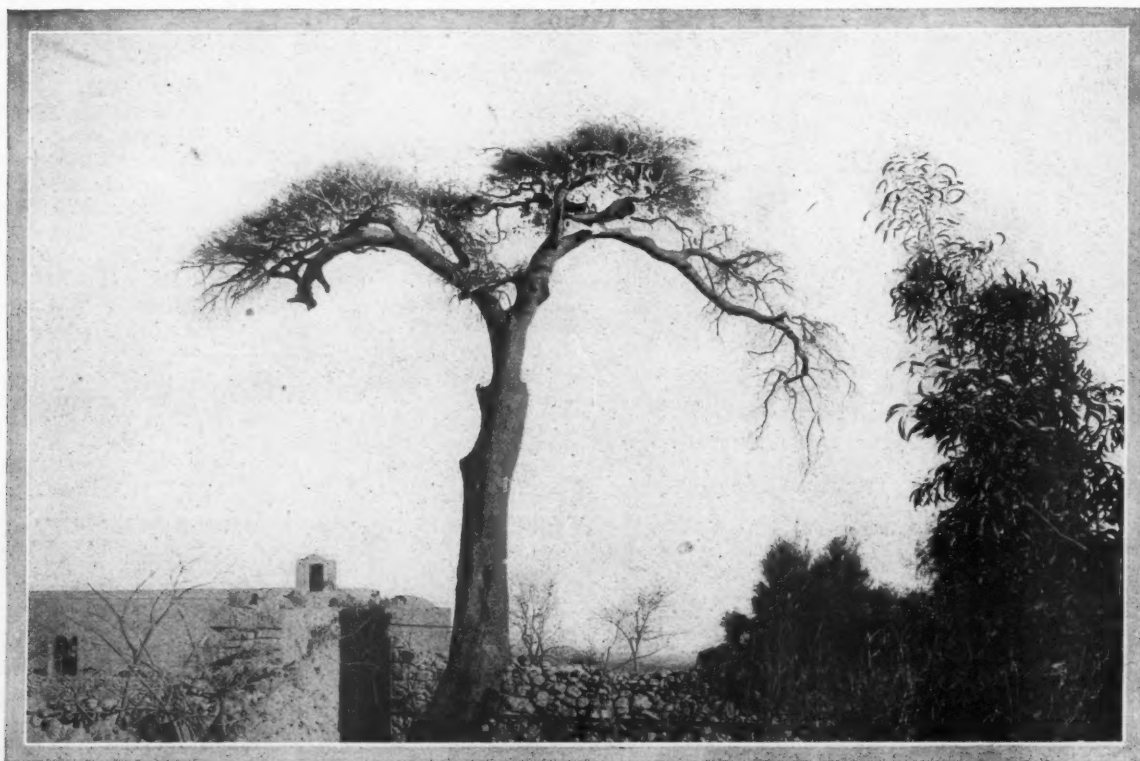
OLIVE TREES IN THE GARDEN OF GETHSEMANE

It is claimed that these are descendents of the very trees under which Christ walked and that they are close to the spot where Judas gave Christ the kiss of betrayal.

OLD OLIVE TREES IN THE GARDEN OF GETHSEMANE

THE illustration for this subject affords a peep into the Garden of Gethsemane, and in the picture is seen the golden gate in the East wall of Jerusalem, a hundred feet or so above the bottom of the valley in which once flowed Wady Sitty Maryam. The gnarled, venerable olive trees in the middle of the garden still clinging to a hoary remnant of enfeebled life, enlist attention. This Garden of Gethsemane can be nothing more than a folk-lore affair, because the exact locality of the real garden was never recorded, and these frail trunks common about Jerusalem may claim an antiquity of one or two hundred years. Nothing short of a stupid credulity would ever credit them with eighteen or nineteen hundred, yet some guide books declare they

come to this walled in, sanctified ground, and whether or not this garden may be the real or traditional spot, it is in the real valley of the Agony and sufficiently near for devotional impression. These trees have been solemnized not only by years, but by the kisses of devout lips, as have been most things connected with the sacred bit of ground. Twenty thousand people visited Palestine annually; fifteen thousand of these were Russian pilgrims. The Russian Government assisted the pilgrims to reach the Holy Land, and when they reached it no shrine real or traditional escaped them; the sincerity of their devotion was pathetic and impressive. They were given to expressing their devout feelings by kissing the objects which



TREE ON WHICH JUDAS IS SAID TO HAVE HANGED HIMSELF

This story may impress the tourist who does not know that the tree is at most only a few score years old—but that fact does not prevent the guides at Jerusalem from calmly declaring that it is the original tree on which Judas hanged himself.

have sprung from successive growths extending back to the time of Christ. The olive tree, like the apple tree, has not the renovating growth of the banyan, or the persistency of the bo-tree, and trees of warm latitudes. The garden is in control of Franciscan monks, who point out the place of the Agony, where the disciples slept, and the place where Judas gave the kiss of betrayal.

Whether the ancestors of these decrepit trees were contemporaneous with Christ or not, they are very old; they are bible trees; they have seen many generations of devoted pilgrims

awaken these feelings. The so-called tomb of Christ in the Church of the Holy Sepulchre is worn into cavities by the kisses of their pious lips. They kissed the seven stations on the Via Dolorosa through which Christ walked on the way to Calvary; they purchased pilgrim stocks and went afoot to Jericho and the Jordan. On the way to Jericho they kissed the spot where the wayfarer was "held up" by thieves; they kissed the ruins at Jericho; they kissed the Jordan River and the Dead Sea; and these old olive trees in the Garden of Gethsemane have endured a goodly apportionment of Russian osculation.

THE TREE ON WHICH JUDAS HANGED HIMSELF

THIS is not offered as an historic but as a traditional tree, and to show how many and how ridiculous are the myths and traditions presented to the credulity of pilgrims visiting the city of the great King. So much tradition, and so little historic fact—there is the traditional place where the tree grew from which the cross was made, the traditional place of crucifixion, the traditional Garden of Gethsemane, the traditional tomb of Christ, in short the well-nigh traditional everything save the

geographical features of the city's site and surroundings. The feeblest and most modern of all the traditions offered by tradition mongers, is that giving, as the tree on which Judas hanged himself, a recent growth of perhaps a few score years. Some sense has been displayed, however, in the choice of a likely tree; for it is located a little South of the city, conveniently near Aceldama; besides, it has a fantastic, lop-sided branching which offers a free suspension. It is also of a convenient height for the attachment and manipulation of the beneficent hemp.



THE NESTING TREE OF THE SOCIABLE GROSSBEAK

This entire tree is one huge nesting place with about one thousand nests all neatly built along streets. The material used is fine grass. Often the nests become so heavy that the trees on which they are built are broken by the weight. The birds and the trees are natives of South Africa.



THE SAUSAGE TREE AND VICTORIA REGIA WATER LILY

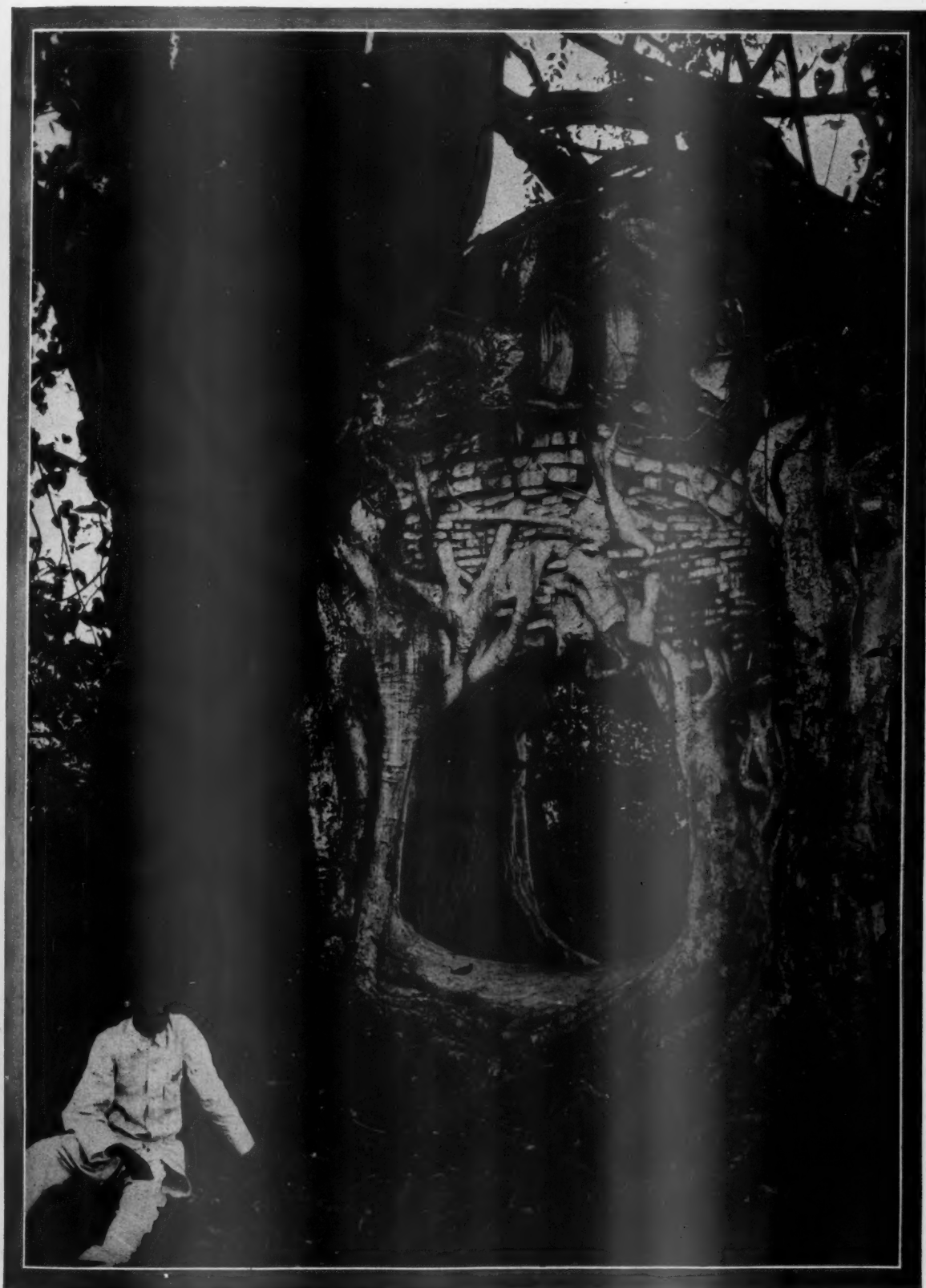
The sausage tree, sometimes called the candle tree, is of the calabash order, but has no edible or commercial value. The Victoria Regia is recognized as the largest water lily in the world; its leaves have a spread of from six to ten feet with a rim five inches deep and will support the weight of a man; the huge white blossom often exceeds twenty inches in diameter. This queen of water plants is common on the warm, still waters of northeastern South America.



Underwood and Underwood.

AN EXHIBIT OF THE CONGO

The great Three Trunked Baobab or Calabash tree of Citras, the Congo, Africa. The baobab or calabash is not even a sixty-fifth cousin to the vine that produces the calabashes from which pipes are made. It bears a fruit that resembles breadfruit, and the wood is used in making fine furniture.



Underwood and Underwood.

THE FAMOUS TREE PAGODA

This is situated at Calcutta, India. Long before the tree sprouted an old pagoda stood on the spot. Then grew the tree, with all the rapidity and size of many tropical growths, winding its roots and branches around the old stone pagoda until the pagoda became practically part of the tree itself.

A NESTING-TREE OF THE SOCIABLE GROSBEEK

THIS tree in itself is not wonderful, but curious and interesting in its transformation; the tree is a member of the mimosa family, a leguminous tree common in South Africa. It is the tree usually chosen by the Sociable Grosbeak for a breeding colony of his kin-folk. The grosbeak is a small bird represented by the cardinal bird and the bullfinch; it is also in the sub-family of the weaver birds. This tree, therefore, is interesting because it supports a nidamental city which has transformed the entire spray of the tree into a bird tenement.

The birds continue to build in the same tree from year to year and with the increase of the families there must be a corresponding increase in nest-making, until the tree falls from its burden of nests. The building material is fine grass. The entrances are below and these entrances are not to single nests,

but to streets along both sides of which are nests about two inches apart. The work required for such an accumulation of material, straw by straw, is incredible, almost rivaling that of King Cheops and his great pyramid. Man is a social being; many birds and animals are also gregarious. There are still aboriginal tribes who build their homes in the trees, as the Vedas of Ceylon. Home-making in the trees, on the part of man, may be an inherited instinct from our Simian ancestry. These Nesting trees of the Sociable Grosbeak often represent in the single tree from eight hundred to one thousand birds. In the museum of Capetown an entire tree, similar to that shown in the illustration, may be seen. Surely this little finch we call the Sociable Grosbeak exemplified the advantage of co-operative labor thousands of years before it has been widely adopted by man.



LIKE GREAT SNAKES ARE THESE ROOTS OF THE RUBBER TREE

Rubber trees of different varieties and yielding various grades of rubber are found in most tropical countries. The annual yield from young trees is from two to three pounds, while from the large old trees it may exceed forty pounds.

THE RUBBER TREE AND THEIR PRODUCT

THAT wonderfully useful tree-product familiarly known as

India rubber was first discovered during the second voyage of Columbus to the New World, wherein it was recorded that the natives in Haiti were found playing with balls of this amusingly resilient substance, and on account of this quality it was called elastic gum. In 1770 one Priestly, a chemist, finding this gum effective in rubbing out pencil marks gave it the name India rubber. In Peru and Ecuador where certain species of the rubber-tree are indigenous, both the tree and its product are called Cahucha, or Caucho, hence the origin of the modernized term Caoutchouc (Koo-chook), for the milky juice of the rubber trees; but this name is so unspellable and unpronounceable that the more simple and euphonious word latex may be used.

There are several species of trees and vines which yield this valuable substance, latex, and which must not be confounded with the vital nourishing sap of the tree. The latex exudes

from sacs in the inner bark of the tree and chemically, is essentially a hydrocarbon. It seems in no way necessary to the nourishment of the tree, and its real function is not well understood.

This lactescent juice produces 20 per cent and upwards of rubber. Of the several species of rubber producing trees and vines, those producing what is commercially known as Para rubber are the most widely cultivated, Para rubber being the standard by which the different grades are rated in the markets of the world. Para rubber is the product of a tree known as *Hevea Brasiliensis*, a native of the Amazon Valley. Another rubber tree indigenous to Brazil yields what is known as Ceara rubber. These two species of rubber trees are now well represented in the plantations of the East. Another species, *Ficus elastica* (Fig elastic), yielding the rubber called "Rombong" in the market, is a native of Assam. *Ficus elastica* is often cultivated as a garden and house plant in Europe and America, and



Underwood and Underwood.

THE BUTTRESSED ROOTS OF THE RUBBER TREE

This octopus-like rubber tree is a native of Buitensorg, Java, and is one of the great attractions for tourists there. This tree is of the species called the fig elastic and yields a rubber known to the trade as Rombong.

when it becomes a large tree it is remarkable for a fantastic development of deep buttressed roots. From tropical Africa comes rubber obtained from various creepers and called Congo rubber, and Madagascar rubber. Rubber is found in a solid state in the fibers of certain plants. The annual yield from young trees is two and three pounds each, while from large old trees it may exceed 40 pounds. Old trees also give a better quality.

The tapping of trees is an important matter in the rubber industry; in the early days trees were cut down to obtain the latex; even after tapping was substituted for cutting down, millions of trees were destroyed by reckless and destructive tapping. In South American rubber lands tapping has long been done by making vertical gashes in a tree with a hatchet. At the base of every gash a small earthen cup is made to adhere by an application of wet clay so that the latex enters the cup. Several of such taps extend around the tree. The latex is collected and another ring of taps is made daily. The gash in the bark must not reach the wood of the tree or a kind of insect will enter the wood at the tap and in a few years utterly destroy the tree. In this way the careless, marauding hand of native tappers devastated vast areas of valuable rubber territory in Brazil and other countries in South America; finally increasing value and decreasing product brought about government protection. In the rubber jungles of the Amazon latex is generally collected in calabashes, and then placed in a large vessel and allowed to simmer over a slow heat to expel water and promote coagulation into marketable forms. Another method of preparing the latex for the market is to dip a paddle-shaped wooden instrument into the latex and then hold the coated blade over a smoking fire made of a certain kind of palm-nuts; this gives a smoky color to the latex and hastens coagulation. This process is repeated until a cake of required thickness is made; this is slit from the blade in the form of a round cake or chuse and is ready for the market. Scrap or refuse is pressed by hand into black balls called nigger-head rubber and is sold as second-grade.

In the rubber plantations of Oriental countries there are several methods of tapping the trees. There is the V tap—a number of incisions in the form of the letter V with receptacles at the apexes of the V's. The herringbone tap is much the same as the spiral tap. These several taps begin about six feet from the ground. The spiral groves are increased in width downward from day to day in order to reach fresh-bark surface, and when all the interspace has been covered the tree is allowed from one to two years in which to recuperate its benevolent cortex. This apparent girdling does not destroy the tree because the tapping does not extend through the inner bark. Trees are tapped at sunrise as it is supposed the latex flows more freely in the early part of the day. Plantation rubber is now often coagulated with acetic acid, and trees will continue to yield copiously for 30 to 40 years if properly treated. Formerly the world's

supply of rubber was from South American countries. In 1915, 60,000 tons came to the United States, one-half of which was plantation rubber from the Orient. Again, in the rubber-tree, we have another generous friend among our tree-folk.

PHILIPPINE WOODS

THE director of Forestry of the Philippine Islands writes that many inquiries are received at his office from people in the United States who wish to know where they can get supplies of Philippine woods, and in order to facilitate handling such inquiries, requests that all importers, dealers and users of Philippine woods in the States supply his office with their addresses, together with information as to the character of their business, whether importers, wholesalers, retailers or users of any kind of Philippine woods. This will enable him to put inquirers into direct communication with the best sources of supply in the States. All communications should be addressed to the Director of Forestry, Manila, Philippine Islands.

SHADE trees may be destroyed by leaky gas mains, which poison the roots, making it impossible for the tree to secure nourishment from the ground. Gas killed trees are often thought to have been killed by insects, and weakened trees are often completely killed by borers or by fungi, which watchfulness and care would save.

SPRING

The pussywillow's blooming,
The fresh turned earth is brown;
And blooms in apple orchards
Are softly fluttering down.

The violets in the meadow
Are blooming in the sun,
And dandelions so yellow
Like bright gold newly spun.

The happy birds are seeking
Homes in each meadow nook;
With phoebe by the old bridge,
And black birds near the brook.

The robins' calls at morning,
In cheerful greetings rise;
At noon the bright spring sunshine,
Greets myriad butterflies.

And many fresh green tokens
Show happy spring is here;
With promise of warm weather,
And summer's blithesome cheer.

—J. Leland Fowler.

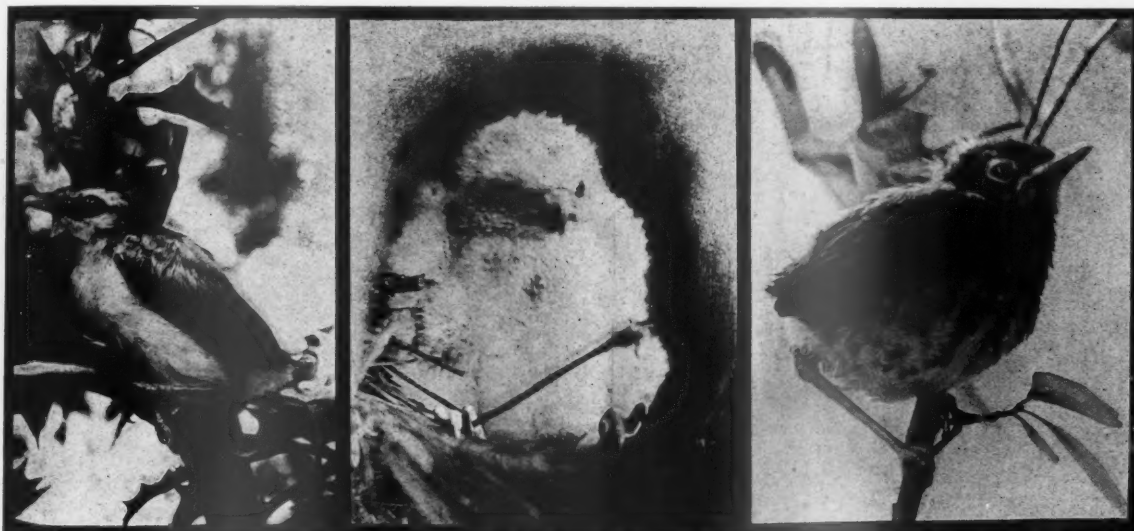
YOUNG BIRDS AND BIRDS' EGGS

BY R. W. SHUFELDT

(PHOTOGRAPHS BY THE AUTHOR)

WHEN one comes to trace back the life histories of our American naturalists to the days they made their first juvenile collections, it will be discovered that they were started with birds' eggs in a large percentage of cases. If they lived in the country, the eggs of the wild birds of the locality were the first ones brought together, and generally arrayed in a modest little cabinet, all being duly labeled with their English names. As such boys come to manhood; pass through college, and enter upon the active work of life, nineteen out of twenty of them forget their little cabinet of eggs, and the nature-taste gradually dies out. In one of the twenty, however, the "bent" is too strong to be so lightly cast aside, and

ample, a song sparrow's egg is a common egg, and specimens of it can be purchased in the open market for a few cents each. Upon the other hand, the egg of the extinct Great Auk is a very rare egg, and a few years ago one sold, at auction, in London, for one thousand dollars. Between these two extremes, the eggs of wild birds the world over fetch all sorts of prices. But to return to our point—the matter of percentages of owners or keepers of large collections of eggs—how few there are that have given attention to all there is to be known about such specimens; and the same may be said of nestlings or young birds generally. It may be noted here, however, that some, indeed many, of the problems of



THREE BIRDLINGS, BUT NONE OF A KIND

Figure 1. As one would naturally expect, young birds of different species and groups vary greatly in appearance and form; this is well shown here where there is to the left, a young red-eyed vireo, a sparrow-hawk in the center, and a fledgling wood thrush to the right.

ornithology, or some other path in general biology, comes to be the professional one followed throughout life. Some go far afield from bird's eggs, and end in becoming palaeontologists, or botanists, or in any other equally remote department; but they all look back with more or less affection to their boyhood days spent in the woods and fields, along streams and seashore, where they discovered their first nests of bluejay, killdeer, and spotted sandpiper.

The writer has met and come to know well many professional men who have made birds' eggs their life study, and some of them have accumulated collections worth all the way up to twenty thousand dollars or more—yes, twenty thousand dollars; for, as in the case of all such material, birds' eggs, like everything else of the kind, run common, not common, rare, and very rare. For ex-

scientific nidology yet remain to be solved. How few there are who can name all the parts of a fresh birds' egg—that is, an uncubated one; while there are few, very few, among us that can, off-hand, carry an incubating bird's egg all the way up from the perfectly fresh stage to hatched bird, naming all the parts as they appear and develop—the entire embryology, in fact, until it terminates in the completed process of the living birdling. From men to mice, each and all of the principal stages of embryonic development—prenatal stages—are exemplified and practically reproduced in the hatching of a humming-bird's egg. But this is only a single chapter; for there is the chemistry of the egg structure, and the questions of teratology or double and united chicks in the same egg, of which there is an endless series, all the way from a bird with three legs to an avian Siamese pro-

duction. And, why are some birds' eggs pure white and unmarked and others variously and highly colored, with all sorts of marks upon them, from minute dots to scraggly lines? How are these spots and markings produced? Then, too, the nests of birds run all the way from the female laying a single egg on the bare rock on the coast, to those laying ten or more eggs in a very elaborate nest built in very different localities. As a matter of fact, the whole study of birds' eggs is indeed a very large subject.

With such a wide variation in the eggs of various orders of birds, it is not to be wondered at that we find a similar state of things, or even more marked departures,

one who has been a close student of avian nestlings may readily distinguish the various kinds, especially should the birds belong to different genera. But to distinguish a week-old nestling of the tree sparrow from a nestling of the Western tree sparrow of the same age—the writer questions that any one, however expert, can do it.

So much for the nestlings of *average* birds—all of which are fed by their parents, and remain in the nest until they are more or less fully feathered, which may require a fortnight or more. Such birds usually possess a plumage quite different from that of their parents, both in coloration and character, in some respects; moreover, we have reason to believe that the first plumages in



HUMMING BIRD'S NESTS

Figure 2. These beautiful nests are of different species of North American humming birds which never lay more than two eggs in their dainty nests. The nests all belong in the splendid collection of Mr. Edward J. Court, of Washington, D. C., loaned the writer for the purposes of photography; they are natural size, and on the limbs or twigs chosen by their several builders.

among a large number of young birds. These latter are frequently referred to as "nestlings;" but in as much as a very large proportion of young birds have never known what a "nest" is, the term can hardly be considered appropriate as applied to all species of this group of vertebrates. What may be considered an average nest, with a pair of nestlings ready to quit it forever, is well shown in the one that our indigo bunting constructs (Fig. 8), which is built in a hemispherical form with coarse grasses, and dead leaves below. Usually it is lined with fine fibers, or more rarely with very fine grass. Many birds, in many countries, build a nest more or less like this one, while the young of such species possess many characters in common, though not so many but that

many young birds agree, to some extent, in the matter of coloration, with what the remote ancestral forms of that particular group, or even species, was. For instance, the first plumage of our young robins presents numerous strong speckles on the breast, which indicates that a remote ancestor of that species possessed a speckled breast *when adult*—the breast of an adult robin of the present day being plain and unspeckled. In the main, this law holds true for all birds, and the proof of it has long been in the hands of science.

Another curious fact to be noted is that in the case of some species of birds the plumage of the nestlings is soft, full, downy, and pure white, and this curious fact is well exemplified in the young of many birds of prey,

as hawks and falcons (Fig. 1), vultures, aningas, some waders and water birds, owls, and others. Curiously enough, in the vultures—as for example in our turkey buzzard—the pure white young, in due time, moult to the wholly black plumage of the adult bird.

Young birds of other species possess no plumage at all in the nestling stage—not even a trace of down. This is well seen in the young of the hornbill of certain islands of the East Indies. Wallace well describes them in his "Malay Archipelago," and he says that when he "returned to Palembang by water, and while staying a day at a village while a boat was being made water-tight, I had the good fortune to obtain a male, female, and young bird of one of the large hornbills. I had sent my hunters to shoot, and while I was at breakfast they returned, bringing me a fine large male, of the *Buceros bicornis*,



A YOUNG OWL

Figure 3. Taken all together, we have over a dozen species and subspecies of screech owls in this country, the one here shown being a nestling of the kind occurring in the Atlantic States. Of all fluffy young birds, the young owl is the fluffiest.

which one of them assured me he had shot while feeding the female, which was shut up in a hole in a tree. I had often read of this curious habit, and immediately returned to the place, accompanied by several of the natives. After crossing a stream and a bog, we found a large tree leaning over some water, and on its lower side, at a height of about twenty feet, appeared a small hole and

what looked like a quantity of mud, which I was assured had been used in stopping up the large hole. After a while we heard the harsh cry of a bird inside, and could see the white extremity of its beak put out. I offered a rupee to any one who would go up and get out the bird, with the egg or young one, but they all declared



A CAT BIRD'S HOME

Figure 4. The cat bird is one of the sweetest songsters we have, yet few species have been more bitterly persecuted and mercilessly destroyed. It generally builds its nest as here shown—in a bramble or in some thicket. The unspotted eggs are of a fine greenish blue, and usually four in number.

it was too difficult, and they were afraid to try. I therefore very reluctantly came away. In about an hour afterward, much to my surprise a tremendous loud hoarse screaming was heard, and the bird was brought me, together with a young one, which had been found in the hole. This was a most curious object, as large as a pigeon, but without a particle of plumage on any part of it. It was exceedingly plump and soft, and with a semi-transparent skin; so that it looked more like a bag of jelly, with head and feet stuck on, than like a real bird.

"The extraordinary habit of the male in plastering up the female with her egg, and feeding her during the whole time of incubation and till the young one is fledged, is common to several of the large hornbills, and is one of the strange facts in natural history which are 'stranger than fiction'."

In the work cited, Wallace gives an excellent cut of the female hornbill he describes, with the curious young one at her side; the latter is a most helpless appearing

creature, and so utterly different from, for example, such a nestling as the young of our quails and their allies, of which there may be upwards of twenty to the brood, and which are hatched thickly covered with a soft down,

prettily marked, and running about with the greatest alertness as soon as they are out of the eggs.

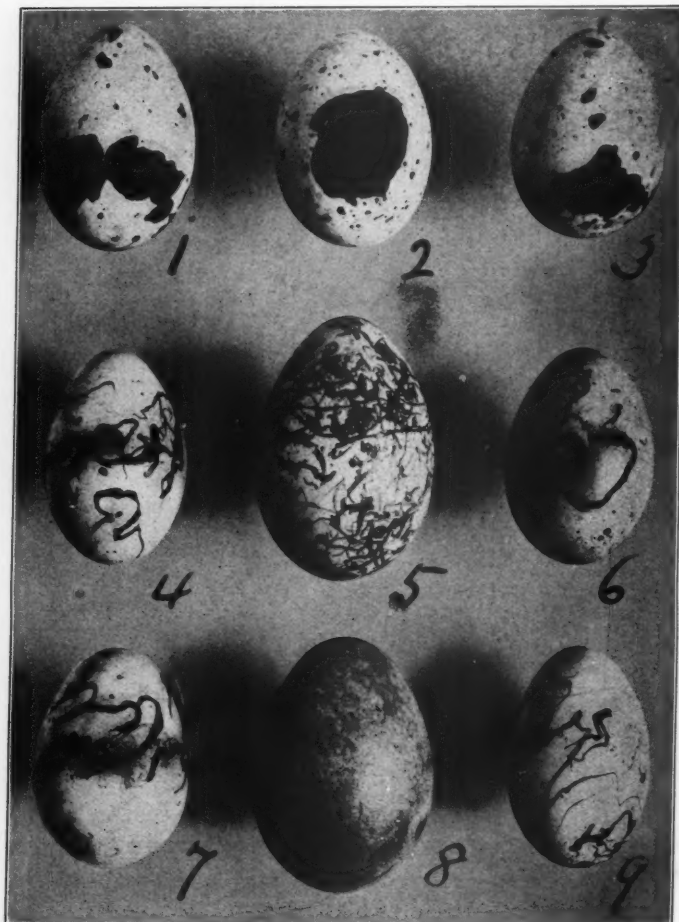
Again, this is entirely unlike the habits of the megapodes or Mound Birds of the East Indies, Australia, and other islands of the Eastern Seas. These birds do not even resort to incubation to bring forth their young, as they either bury their eggs in the ground, something after the fashion of an alligator, or else they lay them on the bare ground, and then, industriously scratching, they heap over them an enormous mound of earth, leaves, dry sticks, and fragments of rotten wood—sometimes almost as much as a cartload of such materials. Neither of the parent birds ever sees the egg or eggs again, the progress of hatching being left to the heat of the sun. But what is still more singular, when the young are born their plumage is *complete*, and they are otherwise highly developed. Off they go, as soon as they can make their way out of the mound, and none of them ever sees its parents.

On several occasions the writer has reared young humming-birds from the nest (Fig. 2); it is curious to note their *short* bills as compared with the long, slender ones of the adult birds, and, as a matter of fact, the bills of nestlings are often entirely different from what we find them to be in the adults of any particular species.

Nestlings of ducks, divers, grebes, and many other strictly aquatic birds take to the water almost as soon as they are hatched; and in the case of the young of the dabchick, it is very pretty to see how they will, to the number of two or three, sit up on the back of one of the old birds as it swims about in search of food, or paddles around among the reeds of the marsh where these birds are found.

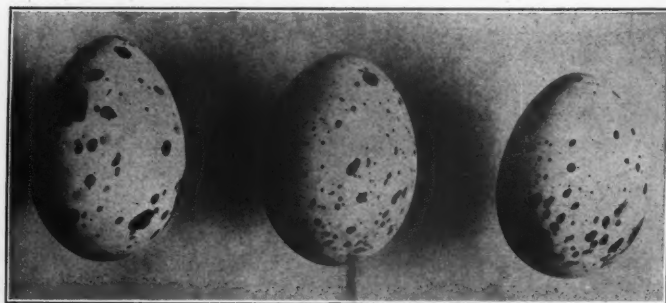
Most herons build in trees in the marshes, or along sluggish streams in the wilder parts of the country, and they usually have several young to the brood. These nestling herons have a peculiar means of defense; for, should any one attempt to climb up to the nest, they all stand up together, in such a way as to obtain a good view of the intruder. When he comes near enough, all of them cast up the remains of their last fish dinner, and, being wonderfully skillful in the matter of landing the same on the face and clothing of the advancing enemy, one may well imagine that, unless the intruder be determined to secure the specimens, he will beat a hasty retreat.

Down on the Amazon they have a curious bird called the Hoatzin; it is about the size of a grouse, and its habits are most peculiar. This cannot be touched upon here, but it is well to note that the very young of this species have the claws and fingers of their pinions so free and so conspicuously developed, that when they get out upon the twigs of the tree where the nest rests,



CURIOSLY MARKED BIRDS' EGGS

Figure 5. In the upper row (1, 2 and 3), is seen a complete set of eggs of our Least Tern; the strong markings only occurred on one side of the egg. The four smaller eggs in the two lower rows (4, 6, 7 and 9), are specimens of the egg of the boat-tailed grackle (*Megaquiscalus major*). All of this group lay eggs with these peculiar scraggly markings, the ground color being light blue or even white. Number 5 is an egg of the regent bower bird of Australia and 8 is an egg of the red-backed magpie of Australia.



A PECULIAR DIFFERENCE

This shows the reverse side of the Least Tern's eggs (Numbers 1, 2 and 3), shown above. The difference in markings, so heavy on one side and so light on the other, is striking.

they can use their "hands" to assist them in climbing up upon or among them.

In the avifauna of this country as well as in that of the Old World, there are a few birds that lay their eggs in the nests of other birds, the latter being of entirely different species or even families. The nestlings of such species are reared by their foster parents, and never at any time see their own. The Cuckoos of the Old World have this habit; while with us it is the Cow-bird which is the guilty one. In either case only a single egg is deposited, and the young cuckoo, as it grows, manages to push the rightful occupants off the nest, being fed by their parents until it is ready to shift for itself. Young cow-birds do not behave in this way; in any particular case they are fed by the foster parents as one of their own brood, and cared for until they all leave the nest at the same time. There is an extensive literature on this extraordinary habit, the subject having been written to the limit.

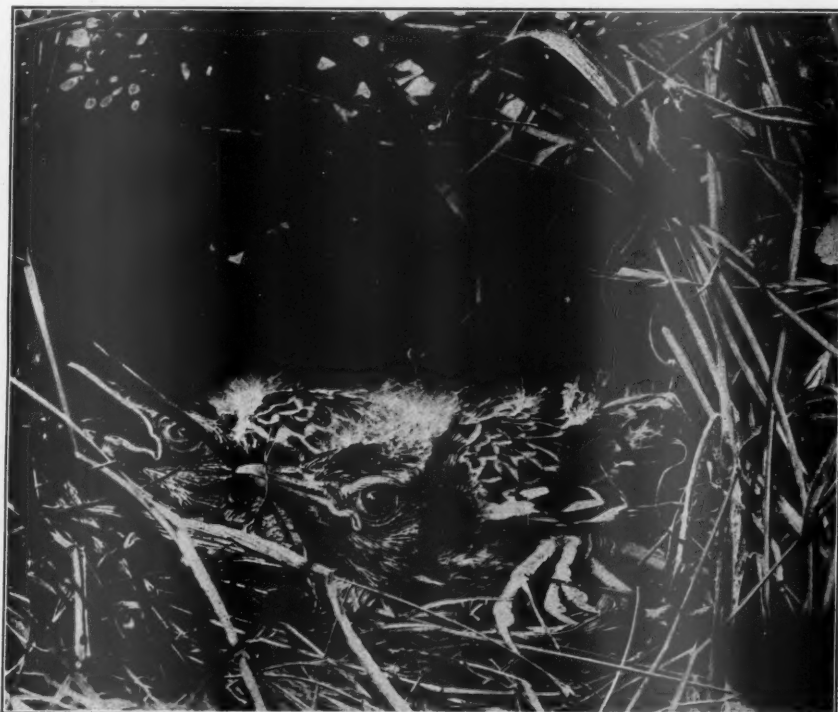
"The whole process has often been watched," says Alfred Newton in his work entitled "A Dictionary of Birds;" "but the reflective naturalist will pause to ask how such a

state of things came about, and there is not much to satisfy his enquiry. Certain it is that some birds, whether by mistake or stupidity, do not infrequently lay their eggs in the nests of others. It is within the knowledge of many that Pheasants' eggs and Partridges' eggs are often laid in the same nest, and it is within the knowledge of the writer that Gulls' eggs have been found in the nests of Eider-Ducks, and *vice versa*; that a Redstart or a Pied Flycatcher, or the latter and a Titmouse, will lay their eggs in the same convenient hole—the forest being rather deficient in such accommodation; that an Owl and a Golden-Eye will resort to the same next-box, set up by a scheming woodsman for his own advantage, and that the Starling, which constantly dispossesses the Green Woodpecker, sometimes discovers that the rightful

heir of the domicile has to be brought up by the intruding tenant." In the case of our cow-bird, the present writer has watched the performance upon several occasions.

Not a few birds in different parts of the world practically rear their nestlings *in the dark*. Well-known examples of this are seen in sand-martins and king-fishers—birds that dig, or scrape out, long burrows in banks, and lay their eggs at the farther end of them. Prairie-owls select the deserted burrows of the "prairie-dogs;" chimney swifts construct their nests far down in dark and sooty chimneys, and woodpeckers constitute other familiar examples of this, as do a vast host of other species of birds all over the world. Upon the other hand, nestlings

of some birds are hatched out in the most exposed places, entirely unprotected from the sun, the rain, and the gales. Many years ago the present writer visited one of the Florida Cays, upon which thousands of gulls, terns, noddies, cormorants, and other species, reared their young; their eggs were deposited all over the naked rocks, to the extent of hundreds upon hundreds. In some places, clutches were



MEADOW LARK'S NEST

Figure 6 The meadow lark is a well-known bird in the country east of the Mississippi, and a general favorite; it builds a loosely-fashioned nest on the ground in a tuft of grass. This typical nest contains two young larks.

but a foot or so apart, while nowhere did they seem to be more than a yard or two. As the birds arose in the air, the afternoon sun was actually darkened by their numbers. Soon the sailors with our party collected several bushels of the eggs for the crew of the gun-boat to which they and the writer were attached at the time—yet the supply would hardly be missed over the area where they were gathered. The distinguished British naturalist, Professor Moseley, states that the incubating albatross holds her single egg in a sort of pouch on the lower part of her abdomen; and Mr. Dudley Le Souef, Director of the Zoological Gardens of Melbourne, Australia, has made a wonderfully fine photograph of a female albatross incubating her egg, in which one-half of the egg is seen within the aforesaid pouch.



YOUNG JAYS

Figure 7. Young nestling jays possess a plumage that distinctly forecasts that of the adults; it is of a lovely blue, barred on the wings with white, with black and white on the nape, and dusky white on the lower parts. These three little beauties were carefully reared, and given their freedom when able to fly well.



YOUNG INDIGO BIRDS

Figure 8. This nest was photographed by the writer in the exact position selected for it by its builders; the background was eliminated in the usual way. At this stage even the male nestling shows but very little blue in its plumage. The birds are about ready to leave home.

It is now a well-established fact that when the female woodcock for any reason desires to remove her young from one place to another, she takes them out, one at a time, between her feet, and, holding them securely, she flies off with them to a place of safety.

From all that has been set forth above, it is clear that the study of nestling birds is a very large and a very varied subject, not to say one full of interest even to the lay student; and when these last chance to be foresters, the opportunities for study are many and of a most varied kind.

Naturalists have bestowed similar attention—and the literature is fully as extensive—upon the description of the processes of the coloring of the egg shells in the case of birds, which, as we know, vary widely in color, marking, and form. The reader's attention has already been invited in this article to the wonderful coloring and markings of the egg shells of many birds; but space



THE CARDINAL GROSBEAK

Figure 9. As shown, the birds built this nest in the shrubs and bushes overhanging a stream in southern Maryland, where the writer, with great difficulty, succeeded in photographing it in situ.

has been lacking in which to describe how all this is done. It has been most extensively studied by not a few investigators, and the subject takes into consideration the form and size of the egg; the anatomy of the parts wherein the eggs are formed and pass out of the bird's body; the physics and physiology of that passage; the character of the parts that secrete the pigments; the physiology of the onlaying of the various pigments on the egg shells as they pass through the parts to the point of exit; the chemistry of those pigments; the effect upon pigmentation owing to the age of the bird or her physical condition as to health or disease at the time of laying, and not a few other things. Yet with all this investigation extending back for more than a century, there still remains much demanding further study and experimentation before even this small chapter in scientific ornithology can be said to be, in this particular field, in any way complete.

WOODEN SHINGLES OR SUBSTITUTES

BY ARTHUR NEWTON PACK

WHAT shall I use for roofing on my house? It is a question asked several hundred times a day from Maine to California. Down in his heart every man is at least a prospective home builder, and with the great housing problem, which confronts our country, this subject assumes tremendous importance.

Fifteen or twenty years ago wooden shingles were three times out of four the choice of the home builder. The comparative expense and difficulty of procuring and laying slate put it out of the reach of most men; ready roof-

creased cost of wood shingles. Where formerly the shingles on our roofs were manufactured only a few hundred miles away at most, and shipped to the builder with but small extra charge for freight, we now secure our best grades from as far away as Louisiana, California, Washington, Oregon, and even British Columbia. Again, good shingle woods, such as white and red cedar, pine and hemlock, used to be found in comparatively flat and easily traversed country. The felled trunks were sawed up into bolts about three or four feet long, loaded on sleds—later on temporary railways—and conveyed to a point of manufacture convenient to the intended market. A visit to a typical western red cedar or California redwood logging operation of today gives a fair idea of the different topographical features now prevailing, and with it an appreciation of some of the items other than transcontinental freight charges which enter into the increased cost of production.

The modern logging railroad of the west is itself a wonderful piece of engineering, threading as it does rough mountainous country, doubling back and forth to ascend the grade to those areas where the great forests still remain, crossing a canyon on a high trestle, and



THE SHINGLE TREE

Cutting the western red cedar from which the shingles are made. This size is typical of the growth in British Columbia.

ing, the modern asbestos or asphalt, as well as tile roofing, were but little exploited; shingles made of paper, asbestos and asphalt were not widely known until 1909 or 1910. At the beginning of the European War, however, this country was producing an amount of tile, slate, metal and various kinds of patented shingle roofing almost half again as great as the total wooden shingle production of the country; but as we exported some patented roofings and imported a large amount of wooden shingles, the probable truth is that we actually used wooden shingles and substitutes in about equal proportion. Since 1914 this ratio has probably been maintained with gains in some sections for the improved types of patent shingles.

Primarily the cause of this change has been the depletion of our National Forest resources reflected in the in-



GROUP OF RED CEDAR

Close together, high and clear, the red cedar is a magnificent forest tree used mostly in the manufacture of wooden shingles.

perhaps passing through several small tunnels. From start to finish the total ascent may be over a thousand feet. When the grade is too steep for the locomotives a cableway is installed for hauling up the empty flat cars and lowering the full loads. Sometimes the large cedars grow on a slope so steep as to appear to the casual visitor well nigh perpendicular, and to reach them the men must often make their way through underbrush which is almost impassable to those unaccustomed to the woods.



GETTING OUT CEDAR LOGS

This shows one of the methods of logging with a powerful donkey engine in the heavy western forests.

The logs, twelve to sixty feet in length and averaging several feet in diameter, are dragged to the loading points by means of a donkey engine so rigged that the heavy cable passes over a pulley block one hundred and fifty feet above the ground. In this way the forward end of the log is lifted and easily over-rides stumps, rocks and other obstructions. Frequently a heavy aerial cableway is used to raise the whole log clear of the ground, thus avoiding breakage of the easily split cedar, and where the distance to the railroad is too great the logs must be rehandled by another donkey engine which hauls them along an expensively constructed skid-road built of large trunks laid in the form of a trough. Were it not for the large wood content of a single one of these logs the cost would be much greater than it is. In fact the logger actually loses money on any trees less than ten to twenty inches in diameter, and such trees are regularly left in the woods. This would be desirable, providing

thus naturally for a perpetual crop of timber, were it not for the fact that the great logs, being snaked along to the logging road by the powerful steam donkeys, continually twist and jam between the smaller trunks, and their weight striking a growing tree eight or ten inches in diameter will bring it crashing to the ground, to lie there as fuel for the next forest fire that gets into the timber.

If we had just these small trees growing on easier ground nearer the market, say in Michigan, each one might readily have a sale value just as it stands in the woods, of three or four dollars, and at that price could then be logged, manufactured and sold at a profit without raising the price of shingles.

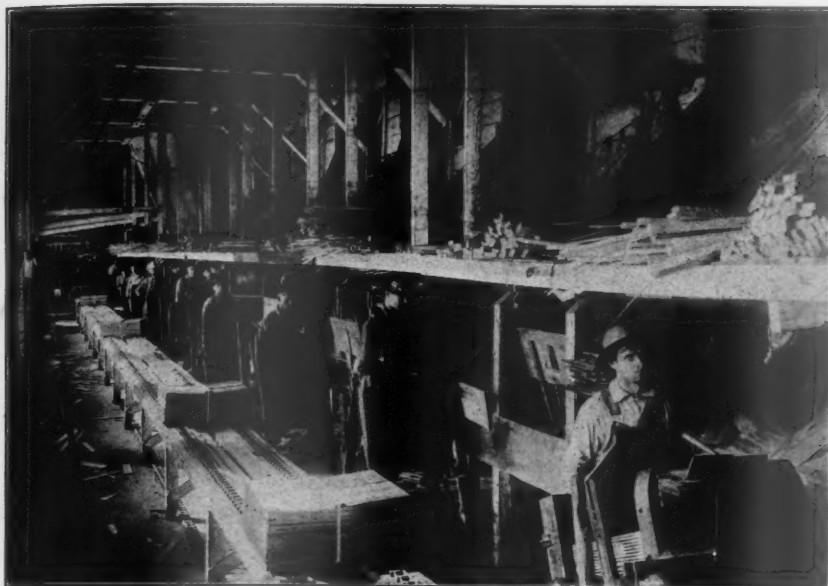
The various kinds of paper, asbestos, asphalt and metal shingles were first manufactured to supply roofing at a cheaper initial cost than wooden shingles. At first they



FROM FOREST TO ROOF

A red cedar lumbering operation in British Columbia woods. The logs are taken to tidewater and the mill on the logging railroad.

were sold chiefly for temporary roofs, such as sheds and garages. Later, however, the manufacturers were able to improve the coloring and appearance so that very handsome effects could be obtained, supplementing their campaign of introduction with advertising on a large scale, and a guarantee of from five to nine years' life. They introduced a real improvement in the roofing trade by selling on a basis which the consumer could himself understand; namely, at so much per Square. A Square was easily explained to be one hundred square feet, and the purchaser could easily calculate for himself just how



Courtesy Clear Lake Lumber Company.

PACKING THE SHINGLES

The shingles come down the chutes to the packing machines where they are secured by bands and cross strips and conveyed on the moving chain to the kiln trucks.

much it would cost to put on a roof of a certain size. Directions for applying the substitute shingles were very carefully worked out for pitch of roof, etc. The purchaser was shown just how and where to put in the nails, and given the fullest possible co-operation by the manufacturer. He could also choose from a number of colors and shades without the labor of staining or painting himself.

Furthermore the fire resistant qualities of asbestos and metal were already well known, and the improved ready roofing materials were well received for that reason. So effectively has this feature been laid before the general public that various towns and municipalities throughout the country have made building regulations forbidding the use of wooden shingles in certain closely settled districts, and fire underwriters began in certain instances to give lower rates for buildings which did not have wood covered roofs.

At this time when we are awakening to the threat of a world-wide lumber shortage, it would be well if we could thus discover an equally good and permanent substitute roofing; but builders and dealers in building materials generally, together

with others who have made a study of the situation, agree that the knell of the wood shingle roof has by no means been sounded.

As above stated, the argument most often employed against the use of wooden shingles is that of fire risk. A great variety of statistics has been brought forward in this connection and the lumber manufacturers have in turn introduced other figures in refutation. Although many statistics have been misquoted, figures prepared by the National Board of Fire Underwriters, covering fire losses of the United States during the year 1918, are said to give the strongest case against the use of wood shingles for dwelling house roofs. Here it is shown that only 2.36 per cent of the loss was reported as caused by "Sparks on Roofs,"

but that out of a total dwelling-house fire loss of sixty-four million dollars, four and one-half millions or 7.1 per cent was attributed to this origin. "Defective chimneys and flues" is credited with 12.4 per cent of the dwelling loss, and "Lightning" comes next with 7.5 per cent. While the evidence that one dwelling house fire



Courtesy Clear Lake Lumber Company.

WASHING THE CEDAR LOG

As the log is being hauled up to the mill it is thoroughly washed by force sprays in order to remove the dirt which would dull the saws.

out of every fourteen of known origin is caused by sparks on roofs is not damning, any reasonable man will admit that it is not a good showing, and everyone who builds or possesses a home owes it to himself and his community to co-operate for the reduction of that four and one-half million dollar loss. The question becomes one

is often the real basis of the fire resistive power of patented substitutes. The law might go further to control the specifications as to nails, as discussed below, for experience has shown that a properly nailed shingle will not fly off, even when ignited. A wooden shingle is the only roofing which will continue to keep out water for years after its most practical life has gone, and after it has so seriously dried and cracked that a person in the attic may see daylight through a hundred odd fissures. The temptation is to leave the old shingles on until the roof actually begins to leak, and there is where the fire risk becomes greatest. Where many houses are built close together there might well be an ordinance



Courtesy Clear Lake Lumber Company.

SHINGLE PACKER AT WORK

The packing is by hand and the frame is inclined and hinged so that the bundle may be easily packed and quickly removed when finished.

of ways and means. Is the remedy necessarily the elimination of the wood shingle?

In the first place the sparks very likely came from the sudden burning out of the soot in a chimney flue. If the flue had been properly built and then periodically cleaned the original mishap would not have occurred. The carelessness of the occupant is really to blame, both for his own loss and that which may have been occasioned to his neighbors. What we lack here is a little of the spirit found in Europe, where a man who has a fire is looked upon not so much as merely unfortunate, but as a public offender.

Rather than to forbid the use of wood shingles in settled communities, the enactment of simple regulative ordinances governing their use would appear effective. Fire resistant paints and stains for wood are now quite generally sold, combining with the fire retarding quality the most artistic color effects. A regulation requiring such treatment of shingles has been suggested as a result of various practical tests. In fact the special paint



Courtesy Clear Lake Lumber Company.

TYPICAL BUNDLE OF SHINGLES

Each bundle is stamped with the area of roof which it will cover so estimates of cost per roof may be easily made.

governing inspection by the fire authorities to determine when this condition really becomes a public danger.

The experience of various communities with the shingle roof problem is interesting. The great fire which destroyed so much property in Augusta, Georgia, started in the "fireproof" business section, spread to the residence section, and was stopped in a wooden dwelling. Authorities have stated that shingle roofs had nothing to do

with the rapid spread of the Salem, Massachusetts, fire. After the great fire in Houston, Texas, a city ordinance was enacted, prohibiting the use of wood shingle roofs within the city limits. Nine months later a large number of the expensive type of dwelling had been rebuilt, using slate and tile roofing. The poorest class of houses also sprang up again with roll roofing and substitutes, but the middle class home, of which the builders understood the natural beauty and lasting qualities of wood shingles lagged behind, and very little progress was made until, after just that nine months' try-out, the ordinance was repealed. Since then Dallas, Birmingham, Alabama, and Lynn, Massachusetts, have been among the communities which have learned by experience that it was not in accordance with practical welfare to legislate against the wood shingle roof, except in their congested business districts. It is readily admitted, however, that in the very closely built sections of cities construction as nearly fire proof as possible should be demanded. Seattle, Washington, is a city of 300,000 people, and most of its dwellings are covered with cedar shingles. The fire chief once said that if shingle roofs were all he had to contend with they might as well disband the fire department.

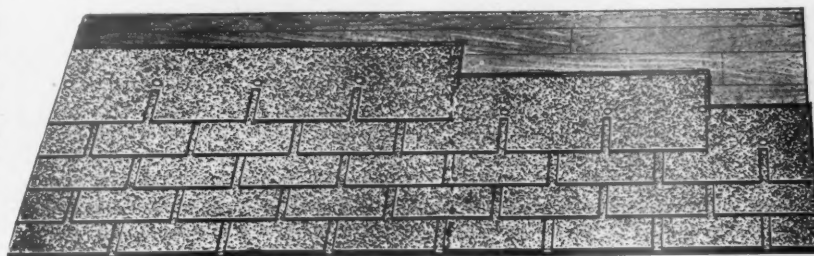
It is not generally realized that wood is a splendid non-conductor of heat. Tests have been made, however, showing that the properly built wood house is exceptionally warm in winter and cool in summer, and that a wood roof is superior in this respect to slate or almost any other material except tile laid with air spaces. The shingle roof also has an advantage over slate and tile in that it is light and does not require such heavy or expensive support. The wood shingle also



Courtesy Barber and Ross, Washington, D. C.

SHINGLES IN SHEETS

Art-craft roofing, strips of composition made to look like shingles, are now being advocated for effective and quickly laid roofing material. This shows the Rock Island Station at Beverly Hills, Illinois.



Courtesy Barber and Ross, Washington, D. C.

COMPOSITION SHINGLES LAID IN STRIPS

These Rex shingles are made in strips of four, and it is claimed save thirty-seven and a half per cent in nails used and the labor of laying.

gives the minimum of noise in a rain or hail storm. Sometimes paper and asbestos shingles seem to blow up in high winds, as a well nailed wood shingle does not.

To many minds the chief objection to the substitutes is that they bear much the same relation to wooden shingles as concrete block construction does to the stone which it strives to imitate. The one has an artificial regularity never possessed by the real thing, and although both may look handsome at first sight, a large expanse of forced regularity soon begins to strike harshly on the eye and is never enjoyed to the same extent as the natural product.

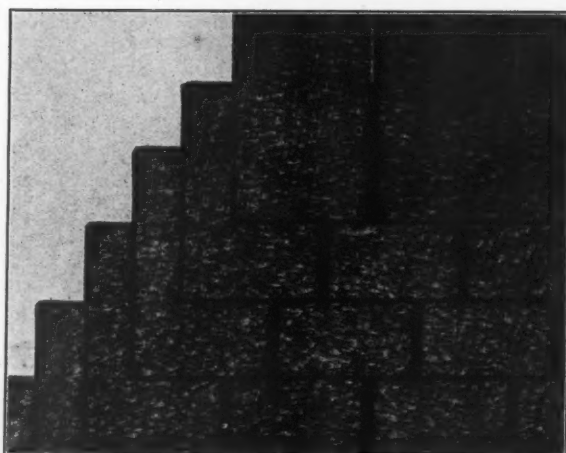
Probably the feature of particular interest to the home builder is that of cost. Slate and tile have always been more expensive than other roofs, for they re-

quire not only a heavier supporting construction, but their initial cost is greater than wood, and the average life is not so long, due to a tendency to break under stress. While roll roofing has always been lower priced than wood shingles the better grade of asphalt shingles became scarce during the war period when ships were not available for the importation of asphalt. Now, however, the initial cost has again declined and, like paper and asbestos roofing, is somewhat below that of wood shingles. The home builder who is forced to save every cent of in-

itial cost on his house without being able to plan ahead as much as he might wish, will probably find satisfaction in some one of the better grades of patent roofing. Patent shingles are often guaranteed by the maker to give good service for from five to seven or nine years. The life of a wood shingle roof, however, when properly laid with the correct grade of material, may safely be figured

at fifteen to twenty years and upward. The wood shingle roof on George Washington's home at Mount Vernon was repaired by him in 1785 and was not again repaired until 1860—a life of 75 years. There have been many instances found where shingle roofs have lasted satisfactorily for fifty years and even one hundred years. It is not at all unreasonable to attribute such a life time to cedar when we consider that the old sarcophagi in which some of the Egyptian kings were buried three thousand years ago are still found in fairly sound condition. One lumber dealer in Montana reported that he was willing to guarantee for twenty-five years wood shingles sold by him.

Now when we come to consider cost per annum a substantial credit balance readily appears in favor of the wood shingle, as compared with any substitute. Yet there is a very important proviso to be considered. Any wooden shingle will not do. The National Lumber Manufacturers' Association, whose office is in Washington, as well as the



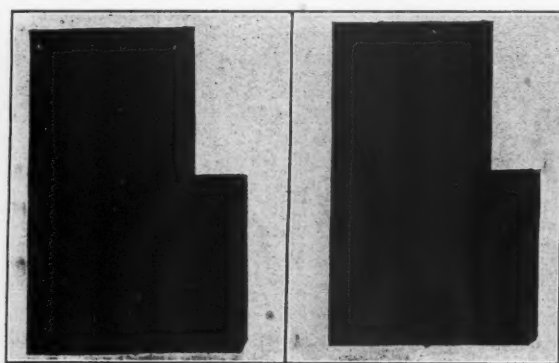
ASPHALT SHINGLES

Vulcanite Individual Asphalt Shingles are laid four inches to the weather and nailed four and one-half inches from the butt.

to hump and curl somewhat. Again the roof should not be less steep than one-quarter pitch, one-quarter pitch meaning that the vertical distance of the ridge above the top of the walls where they support the rafters is one-quarter of the distance between those walls. For one-quarter to one-third pitch the standard sixteen inch shingle should be exposed to the weather only four inches. On steeper roofs the shingle may be exposed four and one-quarter to four and one-half inches,

while on the vertical sides of houses a five inch exposure is conservative.

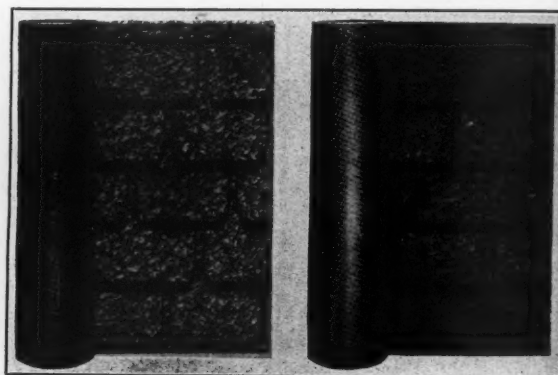
An equally important point is the use of a proper nail. Many builders nowadays lay a shingle roof with ordinary steel wire nails, instead of 3½ or 4d galvanized cut iron nails as recommended by these associations of manufacturers. The steel wire nails are much easier for the carpenter to hold in his mouth, as well as somewhat cheaper and more readily obtained, but they rust very quickly under the influence of



Courtesy Cortright Metal Roofing Company.

A METAL SHINGLE

At the present time wooden shingles and substitutes are used in about equal proportions.



Courtesy Patent Vulcanite Roofing Company.

SHINGLES IN ROLLS

Here is another form of vulcanite roofing in which the shingle effect is secured though the material is made in rolls.

Shingle Branch of the West Coast Lumbermen's Association in Seattle, furnish specifications for the construction of a durable shingle roof. This information is usually found in the possession of the better class of architects and builders, but may be had by any who are interested. The salient points only can be given here, but they emphasize first the use of the best grade clear shingles—not over seven inches wide and not less than five shingles to two inches in thickness measured at the butts. Forty per cent of the shingles sold throughout the country measure six shingles to two inches, and are consequently liable

the wood acids. As time passes these nails thus permit the shingle to buckle and warp, and in event of fire the loosened pieces readily fly off and become a menace to neighboring property. Why use a twenty-five year shingle and a five year nail? Scientific experiments have demonstrated that the modern cut iron galvanized nail is in no way inferior to the old cut nails used by our forefathers, many of which nails are found today in perfect condition when old Colonial buildings are demolished. When cut iron nails are not obtainable good results can often be secured with steel wire nails gal-

vanized by the so-called "Hot-dipped process," although it is difficult for the ordinary purchaser to distinguish these from the very lightly galvanized nail, the zinc coating of which is so thin as to be of little permanent value. It is a recognized fact that steel rusts more readily than iron. In no case should the heads of the nails be driven into the shingles, for this weakens the wood. Experience shows that in buying shingle nails first cost economy usually means long run extravagance and often danger. Further specifications are concerned with proper rafters, roof boards, shingle preparation, staining, joints and laying. When the importance of these matters is appreciated it is easy to realize why some roofs have not been successful and consequently why the owners have sought to discredit wooden shingles.

A recent movement undertaken by the Shingle Branch of the West Coast Lumbermen's Association is a step forward in helping the home builder to compare the cost of wood shingles with substitutes. An agreement has been reached by the members of this association whereby red cedar shingles are to be put up in a new

form of bundle, each bundle to be stamped with the area of roof which the shingles will cover. On the basis of a five inch exposure to the weather one bundle will cover twenty-five square feet of roof, or four bundles to the Square. It is easy to figure therefore that with a four inch exposure it will take five bundles to the Square. Five of these bundles are to have the same number of lineal inches as the old one thousand shingles unit. The association has also gone strongly on record against the manufacture and use of the thinner shingles requiring six butts to make two inches.

With the defects of construction overcome the final decision rests with the home builder. It is up to him to judge whether the beauty, permanence, economy and safety of a wood shingle roof do not make it superior to any other form of roofing within the amount he has to expend; and every man who thus acknowledges the permanent place of wood in home construction will become an enthusiastic recruit to the cause of forestry, through which means alone his own choice of roofing may be made continuously available for the home builders of the future.

THE OLDEST FRAME BUILDING IN AMERICA

BY WILLIAM C. POOLE

HOW long will wood last? How can it be protected from decay? What wood is best to use? These are only a few of the many questions confronting builders of today.

America is new as compared with other lands. The difficulty in cutting and sawing timber in early Colonial days, and the custom of using brick in England led many Colonists to build with brick and stone, so that comparatively few of the early buildings were built of wood.

The old Quaker Meeting House, in Easton, Maryland, is among the oldest, if not the oldest, frame building standing in the United States—just where it was built and as it was built without any change, ad-

ditions or subtractions, and with a perfect authentic record without a break since it was built, between 1682-4. An occasional replacing of the shingles on the roof, and replacing of some of the weather-boarding, is all the repairs it has had. Its frame, inside wood work, and some of the weather-boarding are the same as when built about the same time

time that William Penn, who visited the building, was trading with the Indians and laying out Philadelphia. The white population of the entire country then was not half as many as now live in one of its third-class cities.

The old contract for the building reads: "To agree with ye carpenters for ye building of ye said house 60 foote long and 44 foote wide, and to be strong, sub-



THE OLD FRAME MEETING HOUSE

This quaint old frame meeting house at Easton, Maryland, claims distinction as one of the oldest buildings in the United States, as it was erected in 1683. It is interesting to note that this was the first place of worship attended by Mrs. A. Mitchell Palmer, wife of the ex-Attorney General, whose parents live on the same Maryland farm where her ancestors lived when they helped to build this meeting house.

stantial framed work, with good white oak sills and small joyst, and ye upper floors to be laid with plank and ye roof to be double rafted, and good principal rafters every ten foote, and to be double studded below, and to be well braced, and windows convenient, and shutters, and good large stairs into ye chambers, which chambers are to be forty foote square at each end of ye house and twenty foote between them, and for other conveniences to be left to direction of ye aforesaid friends."

Any builder will wonder how these good folks could build two rooms forty foot square with twenty feet between them in a building sixty feet long. But the contract is clear and the building is open for inspection to see it.

The only preservative used on the wood has been old fashioned whitewash on the outside. Seven of the original plank seats and the wood work inside have had no paint whatever. White oak, white pine, cypress and Southern pine from the Maryland forests of those days were the woods used. They seem in as good condition as when first used, except the roof shingles and some of the weather-boarding which have been occasionally replaced.

If there is an older building of wood in the United

States—standing where it was built without any additions or subtractions, or changes, and with an unbroken authentic record, year by year of its entire history for twenty-four decades—I have failed to find it. Others like Paul Revere's House in Boston are restored and like the Old Ship Church at Hingham, Massachusetts, have had additions or alterations, though some of the original lumber still remains.

Certainly this plain building, in which have worshipped many of the leading people of Maryland for nearly 240 years from the days of Lord Baltimore and William Penn, down to the present time, situated on a beautiful slope in a quiet restful grove of old trees is worth the time and trouble of a visit. Although the congregation which owns it is one of the wealthiest in Maryland, they still maintain the beautiful customs of their faith—simplicity, sobriety, industry, sincerity, kindness, hospitality, and are as their forefathers who worshipped here before them, leaders in the county and State. No price could purchase or change this historic place of worship of their fathers. It remains a beautiful remnant of the Colonial days of nearly two and a half centuries ago.

REJUVENATING PECAN TREES

BY O. B. STRAYER

I RECENTLY ran across an item that I thought would be of interest to pecan and orange growers. It deals with a method in fruit and nut growing that is practically unknown to most growers.

Mrs. T. A. Banning, Robertsedale, Alabama, has conducted a pecan and satsuma orange grove for a number of years. A few years ago she became very much alarmed because the pecan trees especially began showing signs of disease. The nuts dropped off before maturing and the trees presented a general sickly appearance. She was advised that the difficulty was due to hard soil, which prevented the roots from making normal new growth into fresh feeding ground, and also prevented the free circulation of moisture in the soil. This was about the time that dynamite first began to be advocated for remedying that kind of soil condition.

Mrs. Banning decided to try it. The plan adopted was to put down a bore hole about 3 to 4 feet deep, depending on the size of the tree, and located from 3 to 5 feet

out from the trunk. Into the hole is tamped a smooth charge of low-grade dynamite. This charge ranges from one-quarter to one-half pound. The charge is fired with an ordinary cap and fuse. The next year a similar shot is set off on the opposite side of the tree. If the tree is large the shots are sometimes put down in triangular form, spaced about an equal distance apart on three sides of the tree.

Mrs. Banning says that her trees responded splendidly to this treatment. Later on, when setting out 2000 pecan trees and 500 satsuma oranges, they were planted in blasted holes in the first place. She reasoned that if the blasting helped the old trees it would give the young ones a better start and insure faster growth. She stated that this reasoning had been proven correct by the progress of the trees, because all of them set by that method did exceptionally well from the beginning.

The blasting costs very little, as the use of dynamite saves a large part of the laborer's time that would be required to dig a tree hole of proper size.

BOYS' REFORESTATION CLUBS IN LOUISIANA

WHAT is believed to be an entirely new idea in forestry, or more properly speaking in forestry education, has just been announced by the Louisiana Department of Conservation through Commissioner Alexander. This idea is the formation throughout the State of what will be known as Boys' Reforestation Clubs. These clubs will be along the same general lines as Boys' Pig Clubs, Corn Clubs, etc. The Boys' Club Agent of the State, Mr. W. C. Abbott, is co-operating with the Conservation Department, so that boys joining local clubs anywhere in the State can choose a refor-

estation project as a basis for membership in the club.

The object of the reforestation clubs was described at a recent meeting of the Forestry Advisory Board of the department by Colonel W. H. Sullivan, the originator of the plan. Colonel Sullivan is general manager of the Great Southern Lumber Company and of the Bogalusa Paper Company, at Bogalusa, Louisiana, and was recently appointed to the forestry board by Governor Parker because of the great interest which his own companies are taking in reforestation. The other members of the board as recently appointed by the Governor are M. L.

Alexander, Commissioner of Conservation, ex-officio chairman; Professor J. G. Lee, of the State University at Baton Rouge, also an ex-officio member; Henry E. Hardtner, of the Urania Lumber Company, Urania, and Colonel S. T. Woodring, of the Calcasieu Longleaf Lumber Company, Lake Charles. In addition to his interest in the lumber industry, Colonel Woodring owns a good sized farm in Calcasieu Parish, and is identified with the agricultural interests of that section of the State.

In order to be a member of a reforestation club, Colonel Sullivan proposed that a boy should either plant an area with trees, or take scientific care of a young grove already established by natural reforestation. The object of the boys' clubs will be to interest the rising generation in tree growing and bring it to an appreciation of timber as a crop. The rules of the 1921 competition, as worked out by the Forestry Division of the Department of Conservation, contemplate dividing the contestants into several classes, based on the kind of work done—whether planting, or thinning and otherwise caring for trees already established—and the age of the stand cared for. That is, there will be one class composed entirely of boys who are planting up an acre of ground with species of pine; another of boys who are planting up a like area with hardwoods or cypress; another of boys who are taking care of three acres of seedling pines; another of boys caring for three acres of saplings, etc. There is no limit on the size of the tracts which the boys may undertake to plant or to care for, so that in all probability the boys will do more than the minimum required by the rules of the contest. The prizes, however, will be awarded each year on the basis of the best plant-

ed acre and of the three acres which receive the best care.

Five hundred dollars in prizes for the 1921 competition has been donated by Colonel Sullivan in the name of the Great Southern Lumber Company, and the competition for these prizes will be state-wide. The judging will be done by the State forestry officials and will take into consideration such things as the completeness of the stands, the kinds of trees used, the volume and quality of the standing product, the general vigor of the trees, and similar considerations. One of the rules of the contest will require that the boy's parent or guardian, who provides the boy with the necessary land, will enter into a reforestation contract with the State covering the area in question. Under the Louisiana reforestation contract law taxes are kept at the same level throughout the period of the contract, which may be from 15 to 40 years, at the discretion of the Department, and governed by the desire of the owners. By this rule, the department expects to insure the permanency of the reforestation work, although there is nothing iron-clad about the reforestation contracts, which may be broken at any time by an owner who is willing to pay up the back taxes with interest. As soon as a qualified man can be found the State Department of Conservation proposes to put a farm forestry expert into the field who, among his other duties, will supervise and encourage the work of the boys in the reforestation clubs. The State will aid

also by donating a small amount of tree seed, and later probably tree seedlings, to those who wish them. Inquiries are already coming in from the country parishes, and the State Forestry officials expect great results from the clubs.



SILENT SENTINELS

BY HAZEL V. PARIS

THE poplars on Thorn Mountain in Jackson, New Hampshire, make no claim to great antiquity nor to historic associations. I don't remember that Starr King mentions them in his history of the White Mountains nor did Hawthorne weave a fanciful legend about them. They are of too recent growth to have become part of the mountain tradition. Our ideas of time are always comparative. Twenty years may not seem to you long to have known two trees; but to me who knew the poplars first as a child, those two decades have been nearly a life time. Few of my friendships are of longer standing.

If I were a poet, I should weave a song of storms and gales, light summer showers and singing birds, fleckless blue skies and carpets of spring flowers, and

mountains—mountains and two poplars—even though Joyce Kilmer does say:

"Poems are made by fools like me,

Only God can make a tree."

I'm not a poet though, so all I have been able to do was to love and photograph.

With things stately and majestic, even as the years of our friendship multiply,

our attitude never becomes familiar. The spirit of reverence is too deeply instilled within us. So with the poplars. As time after time I pass between them, on up the mountain, and look back at them, I am strangely silent. I often wonder how many can answer the password they ask through the years. And what is the password of these "Silent Sentinels?" I have never yet LEARNED it, though its meaning is always clearly felt.

ACTIVITIES OF THE AMERICAN FORESTRY ASSOCIATION FOR MARCH, 1921

Urged Governor William D. Stephens and legislature of California to pass bill appropriating \$300,000 to save the Redwoods along the State Highway in Northern California.

* * * * *

Protested successfully against contemplated action by the legislature of Texas in combining the Forestry and Agricultural Departments under the Commission of Agriculture.

* * * * *

Secured the endorsement of the Council of Jewish Women (Pittsburgh Section) for American Forestry magazine, the Council passing resolutions urging its adoption in the public schools.

* * * * *

Completed organization of women in Tennessee as State and County Committees to co-operate with the American Forestry Association in securing State forestry legislation and forestry development.

* * * * *

Aided Newark, New Jersey, Museum Association in securing information about trees and forests for use of children of that State.

* * * * *

Urged the saving of the Sand Dunes of Indiana by individual donations and State appropriations amounting to two million dollars.

* * * * *

Received acknowledgments from Great Britain, France, and Belgium, of receipt by each of four million Douglas fir seed sent by the American Forestry Association to aid in reforesting war devastated areas.

* * * * *

Urged the Maine legislature to appropriate funds for the establishment of Mount Katahdin State Park.

* * * * *

Published numerous articles in favor of the Snell forestry bill in newspapers with a combined circulation of 27,000,000.

* * * * *

The Association asked every newspaper editor in the United States to protest to the Senate against the House cutting the forest fire co-operation item of the Agricultural Bill to \$125,000. The Senate thereupon increased it to \$625,000. The Association at once asked the editors to request the House to agree to the Senate's figures. The editor's responded. The House compromised, and the bill as finally passed carried an appropriation of \$400,000, a gratifying increase of \$275,000 over last year's appropriation.

* * * * *

The Newspaper Enterprise Association was sent on request plans for a tree study campaign for its chain of newspapers which reach six million readers.

* * * * *

The Delineator Magazine was sent on a request a feature story with pictures on the Hall of Fame for trees with a history of the movement.

* * * * *

The Dayton News has started in co-operation with the Association the national tree voting and tree study campaign in every school in Montgomery County, Ohio.

* * * * *

The Nashville, Tennessee, Art Association has started a campaign for tree study in every school in Tennessee and is putting the plan on with the Association's national tree voting plan.

* * * * *

The Diamond Match Company used a page feature from the Association in its Diamond Bulletin.

* * * * *

The American Association of Nurserymen promoted tree study in schools throughout the country with the Association's data.

* * * * *

The Chamber of Commerce of Metuchen, New Jersey, put on a bird house building contest in co-operation with the Association.

* * * * *

The Methodist Sunday Schools of Mount Morris, New York, received from the Association plans for an educational campaign in bird and tree values.

* * * * *

The Associated Press carried five news stories from the educational section of the Association in a little less than six weeks. These news articles varied in length from one-half to two-thirds of a column, and were printed by newspapers having 22,000,000 readers.

FOREST RECREATION DEPARTMENT

ARTHUR H. CARHART, EDITOR

SHOWING HENRY SOME COUNTRY

BY K. D. SWAN

FOR two days our little party of three had waited at the Seeley Lake Ranger Station, watching for the weather to clear. The August rain, coming near the end of the month, was very welcome, for it definitely ended the drought of summer, and put our minds to rest on the question of forest fires.

Our trip had been undertaken to "show Henry the country," and was planned to lead us by the Clearwater Lakes, over the divide to the head of the Swan River, and thence across the Gordon Pass and down Gordon Creek to the South Fork of the Flathead River. Whether or not we should visit Big Salmon Lake was a matter to be decided later; for as a certain amount of leeway of itinerary lends zest to a trip, we were willing to leave much to decide as occasion demanded. The skies cleared on the

evening of the second day, and we were on the trail next morning, long before the whiteness of the early frost had disappeared from the ground. The ranger led the way, followed by two horses, whose amply rounded packs

bespoke many luxuries in the way of grub and bedding. Henry and I brought up the rear. Henry had never ridden a horse. His was to be a delightful experience. I did not envy him then; nor do I now.

It was my duty to photograph the scenes along the way, and to prepare for consumption what the ranger was

pleased to note as the "garbage." I admit that mine was the best job.

Our way led along the timbered shores of the Clearwater Lakes—Inez, Alva, and Rainy—by Summit Lake, near the top of the divide; and down gentle slopes,



HOLLAND LAKE

We reached the west shore at sunset, where from the shadowy woods, we looked across the mirror-like surface of the water to the rugged peaks. A light breeze almost imperceptibly touched the surface of the lake, blurring for an instant the reflected picture and then died out.

One of the direct aims of this department of Forest Recreation is to get YOU out into your own forest playgrounds. For after you have tasted of the joy of camping in these great stretches of country you will often answer the call which will lead you into such places as this story pictures.

Do you envy Henry & Co.? Would you not have given a lot to be with them that day at Big Salmon? Cannot your mind's eye picture the camp on Gordon Creek, or the camp at Big Salmon, or the fight Henry had with the big rainbow he landed?

Well, the Flathead National Forest, all the great National Forests, are yours. You are not making the most of your opportunities if you merely wish you might take this trip to Big Salmon or any other beauty spot in a forest. A great lot of the initiative in this is in your hands. The forests will welcome you if you are a good camper. They are there to be used and yours to visit as long as you like or where you will.

So why envy Henry? He only took the opportunity which is also yours. How about it? Will you spend your next vacation in such a wilderness land as the Flathead Forest?

If you do this delightful tale of a trip in the wilderness has carried you the message I would have it bring.—Arthur H. Carhart, Editor, Recreation Department.

covered with a magnificent growth of yellow pine, to the Gordon Ranch—a little kingdom of fields and forest hidden away at the head of the Swan River. Those who have been in the Montana Hills need no introduc-

tion to that clear, brisk weather so apt to follow a rain in the latter part of August. There is no blending of mellow tints in an atmosphere devoid of haze. Each detail of the landscape holds its definition in the vivid mosaic of the whole, and as the day advances, the blue of the sky seems to become bluer above an earth of scintillating color.

Haying was in full swing at the Gordon Ranch, and as supper would be deferred until dark, we had ample time for a visit to Holland Lake. We reached the west shore at sunset, where from the shadowy woods, we looked across the mirror-like surface of the water to the rugged peaks beyond on which the last rays of sunlight were fast dying out. Their rough, scarred sides, looking very near in the clear light, were reflected perfectly by the unruffled water. A waterfall could be seen in a ravine between the peaks. A light breeze brought us the faintest murmur from this fall, almost imperceptibly touched the surface of the lake, blurring for an instant the reflected picture, and then died out. The fading light at last warned us to return to the ranch, and reluctantly we mounted and rode quietly back through the twilight woods. As we reached the open fields the western sky was rapidly flushing to rose and orange, against which the sharp blue silhouettes of the Missions rose, their outlines as sharp as if trimmed by shears from sheet metal.

Ours was untroubled sleep that night, rolled in the comfortable beds of the ranch bunk house. Reluctantly, we answered the call to a four o'clock breakfast, although we did full justice to a repast prepared for the hearty appetites of the hay hands. Free-hearted hospitality was here, augmented by an abundance of grub, and good cooking.

Morning shadows still lingered on Holland Lake as we followed our trail around the north shore, advancing towards the mountains, which, seen across the lake, had so impressed us the



Upper

HIGH COUNTRY OF THE FLATHEAD FOREST

Persuading ourselves that there would be time to spare, we climbed to this point where the grandeur of the view tempted us to loiter well into the afternoon.

Middle

BIG PRAIRIE

At last South Fork was crossed and the trail emerged on Big Prairie, a broad plain covered with grass and scattering groves of pines.

Lower

BIG SALMON LAKE AND LOCOMOTIVE ROCK

A strangely sculptured cliff, known as Locomotive Rock, juts high above the ridge on the south keeping lonely vigil over the lake.

preceding evening. The lake was soon left, and the trail started in earnest the climb to Gordon Pass, twisting and zigzagging up the steep mountain side. As each switchback was turned, wider and wider views unfolded to the westward—the snow-covered Missions, dominated by McDonald Peak whose upper slopes were dazzling white in the morning sun; while further to the right was the broad open valley of the Swan River, down which could be seen miles of heavily timbered country. We made a brief stop at a wooden tripod, marking a fire lookout station occupied during the summer. Henry, even more than the panting horses, welcomed these stops; indeed, as the day advanced, he developed a wonderful aptitude for enjoying the view—out of the saddle.

These rests were brief, however. We left the zigzags behind, and the trail hugged a steep side slope, now crossing great patches of slide rock where the horses found a precarious footing, now twisting around some giant fir, whose massive, distorted growth tells of years of struggling existence against the rigors of this exposed position. Up and up we climbed until a sudden turn and a last steep pitch brought us at last to the natural gateway at the top of the divide. This gateway is known as the "Hole in the Wall." It is more of a steep-sided cut than a hole, and makes an easy natural pathway through the rocky knife edge of the divide.

A great bank of dirty snow, solidified almost to ice, filled this cut from end to end. Joyfully, we unpacked on this snowbank, and finding a couple of cans of fruit, hastily buried them in the snow, digging them out later, cold as ice, to make a dessert for our meal.

North of this point, and easily reached by a half-hour scramble up the rocks, is one of the best view points on the Swan River divide. Persuading ourselves that there would be time to spare, we climbed to this point, where the

grandeur of the view tempted us to loiter well into the afternoon. To the east, a seemingly endless array of mountain stretches to the Continental Divide; to the south is the rugged gulf at the head of Gordon Creek



A LAKE NEAR THE TRAIL

Upper

What more enticing spot could be found for weary traveler on forest trail than the meadow near this gem-like lake. The wild beauty of these water mirrors call to all lovers of outdoors in a language more subtle than written or spoken word.

BIG SALMON COUNTRY

Middle

A land of giant forests, of timber clad slopes, of lakes of unusual charm and streams where lurk fighting rainbow trout is yours in the vacation lands of the Flathead National Forest.

BREAKING CAMP ON GORDON PASS

Lower

The little park and meadow where Henry & Co. watched the display of the Aurora, told tales beside the blazing fire and where after an early morning breakfast packs were made up and the trip down Gordon commenced.

beyond which rises Crescent Mountain and its allied peaks; while from south to north the same view that cheered our way during the morning completes the panorama—the Mission Mountains and the Swan Valley. Holland and Elbow Lakes peep out from the forest cover below, between which the fields of the Gordon Ranch are plainly seen.

On this sightly point, we indulged in the diversion of "looking at things upside down." This, as most know, is accomplished by leaning over until one looks at things upside down from between the knees. The ordinary landscape takes on a vividness of hue quite imperceptible when viewed in the ordinary way. It also made Henry dizzy.

But join our little caravan again as it slowly picked its way, slipping and sliding, down the steep slope below the Gateway. The steepest part over, we passed through several tiny Alpine meadows in which brilliant flowers were blooming. In drier spots were beds of the Mountain Heather, the delicate pink blossoms rising from clumps of deep green foliage. Here the tree growth has a better chance, the Alpine firs attaining the spire-like form which is so graceful in its symmetry.

Two small lakes were passed, the first rather desolate, with forbidding granite shores and leaden-hued water; the second below it, in a steep-sided timbered amphitheatre. Unlike the upper, the lower lake had water of a greenish hue, rippling and sparkling in the afternoon sun as we caught glimpses of it through the trees on our descent to its margin.

Camp was made in a tiny meadow at the head of this lake. Although the sunlight still lingered on this meadow, the chill of evening was in the air. Gradually the shadows of the hills we had crossed crept over our camp, and looking up, we saw that the sun had gone. We drew in closer to the supper fire, by the welcome blaze of which we appeased appetites sharpened by the cold. As the night was clear, the tent had not been pitched, our beds being spread under the open sky. The tent was drawn over all as extra bedding. The dishes washed, we heaped the fire with dry wood and basked in the warmth, telling stories until too drowsy to stay awake longer. Then, leaving the fire to die as it might, we crawled under the

frosty covers. The flickering light from the fire gradually disappeared, and as our eyes became accustomed to the darkness, we saw great wavy streamers of the Aurora extending above the northern mountain wall almost to the zenith. They added a wierd interest to the scene, their strange, moving fingers of light one moment glowing high into the heavens, and the next instant receding almost to the horizon. A slight breeze, cold as a breath from winter, drifted across the meadow, touching our faces with an icy kiss. It sighed a moment drearily among the trees on the lake shore, and then all was silent but for the occasional note from the horse bell. I remember hearing Henry remark how lonesome it seemed, and then I fell asleep.

An early breakfast in the little meadow, before the sun had risen to dispel the hoary aspect of the mountain world, preceded our long day's trip down Gordon Creek

to Big Prairie. It was another day of brilliant sunshine, warming to summer heat towards noon, and making us wonder if our shivery night in the meadow had not been a delusion.

The massive hills on either side of Gordon Creek are buttressed by precipitous bluffs of limestone whose whiteness, colored in



FIRE LOOKOUT STATION, FLATHEAD NATIONAL FOREST

We made a brief stop at a wooden tripod marking a fire lookout station occupied during the summer. Henry, even more than the panting horses, welcomed these stops.

places by streaks of mineral, and rising above the green forest, forms a dazzling contrast with the blue of a clear summer sky. As the day advanced, masses of billowing cumulus clouds, whiter by far than any cliff and yet bearing delicate shadow tones away from the sun, rose above the valley to the south, casting fleeting patches of shade which would surround us for an instant and then hurry away to leave us again in blinding sunshine.

At last the South Fork was crossed, and the trail emerged on Big Prairie, a broad plain covered with grass and scattering groves of pines, through which the river finds its way, now curving in graceful meander, now foaming over stretches of noisy riffle. In every direction a mountain arrests the eye. One charm of the Prairie lies in the individuality of these surrounding hills. Each has characteristics of form unlike the others, and in majestic array, they surround the valley not near enough to oppress by their presence, but standing apart like friendly sentinels keeping watch over this sheltered domain. Chief of these is Gordon Peak, rising with

shapely bulk to the south, flanked on the east by Flatiron Mountain and on the west by the mountains which we had passed in our journey down Gordon Creek.

The trail from the point where the river is forded leads down the prairie for a mile or so, finally bringing one to the ranger station, a building constructed of logs and lumber which was whip-sawed on the spot. Sounds and smells from within indicated that supper was in progress. With the help of the ranger, our horses were quickly unpacked and turned out to graze, and we were soon installed at the table doing full justice to a substantial supper, the chief item of which consisted of fried trout, done to a brown with meal and bacon, and heaped in a milkpan of generous proportions.

In contrast to the camp of the night before, this evening was spent in the cozy kitchen of the ranger station, listening to stories told by the rangers and two of the fire guards who were returning from their summer's vigil on Gordon Mountain. As is usual in such company and under such conditions, the conversation gained in color as it

the Lake States. We of this day and age can hardly realize the tremendous scale on which these logging operations were carried on at that time by the redoubtable Paul. The enormous griddle necessary to fry hot cakes for one of his smallest camps was greased by two stout lads who slid over the surface with hams tied to their feet. Henry, at this point in the tale suggested that we go to bed, which we did. But next day, he made several surreptitious inquiries as to the further



ON GORDON CREEK, FLATHEAD NATIONAL FOREST

Glacier, peak, timber and cliff tell their own story of rugged alpine scenery and many a man besides Henry, the man of this story who sought the wilderness in company with his friends, would welcome the need of roughing it a bit to reach such mountain fastnesses.

minating gem of the evening was a tale told for the edification of Henry, and the authenticity of which was solemnly vouched for by at least two members present. It dealt with certain logging operations carried on by an individual, Paul Bunyan, lineal descendent of the great moralist. Paul, it seems, had an eye to timber, and managed extensive projects in the white pine woods of



NEIGHBORS AT BIG SALMON

Visitors appeared in camp that night and joined our fireside party. They shyly admitted being on their honeymoon, a fact which we had already suspected before they were brave enough to confess.

progressed and became imbued with that delicate imaginative quality which, while never deviating *far* from the strict truth, yet leads the listeners into the realm of the romantic and fantastic. The cul-

Twelve miles below Big Prairie, hidden in the hills west of the South Fork, lies Big Salmon Lake. Being far off the main lines of travel, comparatively few people see this beautiful sheet of water. Unspoiled by men or forest fire, it lies among the surrounding hills in wild loveliness, to be sought only by the more adventurous traveler or sportsman. By unanimous agreement our party decided to visit this secluded lake, and to idle for a day or two in its vicinity before starting on the homeward journey.

Tired by the preceding days of strenuous travel, we loitered along the trail, which below the ranger station is much better than any we had lately traversed. Little exertion was needed on our part, and we rested easily in the saddle, jogging along to the monotonous sound of the horse bell. The day grew warm as we progressed, and soon most of our extra clothing was tied behind the saddle. Whenever we stopped, numbers of flies made



GORDON PASS TRAIL

Each turn in the trail presents unusual pictures of wilderness beauty. Rugged cliffs, carved by water and wind and crowned by green timber make a pleasing outlook framed by nearby trees.

achievements of Paul, and by the end of the trip, he had gained a creditable familiarity with the history of this great man, and was able to recite without a smile many of the events in his remarkable career.

life miserable for the horses. At last the South Fork was forded at a point near the mouth of Salmon Creek, the outlet of the lake, which lies about three miles from the main river at this point. A camp spot was selected on a bluff overlooking the South Fork.

A more ideal camp would be hard to find. The top of the bluff was level, carpeted with a growth of clean, soft grass and shaded by an open growth of pine. Plenty of wood was within easy reach, and it was only a few steps down to a pebbly beach, from which by leaning out ever so slightly, one could dip up a kettleful of the clear, rushing stream. Not far below the camp a giant granite boulder caught part of the swift current, turned it aside in a seething swirl of foam, and left it to regain its poise in a deep pool of pelucid green water, close under the bank. Henry had as yet evidenced no desire to fish, but one look into this pool sent his jaded legs scurrying back to camp for rod and line. Here we left him, agreeing to call him in time for lunch.

Preparations for dinner were somewhat elaborate. Unlike the hurried noon lunches of the preceding days, this was to be a sumptuous and leisurely meal. The packs were rifled for treasured delicacies, which had been discreetly hidden until now. Preparations lasted until well into the afternoon, each of us taking satisfaction in doing things with a certain preciseness omitted when lack of time or fatigue causes one to overlook many little niceties of culinary technique.

At last a shot was fired as a signal for Henry to bring his catch. Five minutes later he appeared, bringing a string of fish that would have done credit to a far more experienced sportsman, and which, I think, lent color in Henry's mind to the fish stories which had formed a considerable part of the preceding evening's entertainment. With a beaming smile he held up his fish, weighing in the neighborhood of two and a half pounds. He insisted on dressing and cooking it himself—the first and only attempt at cooking that he made on the trip. That it was highly successful, we all admitted.

We finished the meal and lay comfortably stretched on the ground, happily oblivious of the array of dirty dishes scattered about. The talk rambled idly from one subject to another, the general lassitude hardly inspiring much conversational effort. Henry thought he "might try his luck again before dark," which brought forth some remark about washing dishes. At this propitious time visitors appeared in camp. A man and his wife were camping no great distance away and had been notified of our presence by the shot fired before dinner.

I suspect they had been spying on our festivities, an innocent enough pleasure to which they were welcome. They had been in this secluded locality for ten days, had seen no one but two fire guards who were camping on the lake; and last but not least, had run short of many essential articles of food, being at present reduced to the necessity of living largely from fish, lard and flour. They shyly admitted being on their honeymoon, a fact which we had already suspected. The remains of our sumptuous meal excited their wonder, the label of each empty can being examined with surprise, and possibly a touch of secret derision. In an effort at hospitality, we unearthed a can of fruit from our dwindling store, which our visitors admitted was a welcome treat.

The talk lasted far into the evening, the dishes still happily forgotten. Plans were made for a trip on the morrow to the top of one of the mountains near by under the guidance of our new friends.

At last a spot light was improvised with the empty fruit can and a piece of candle, and after gracious offers to wash the dishes (which we as graciously refused), they lit their tiny light with a splinter from the fire, and left to pick out the shadowy trail to their tent. A shot fired a few minutes later told us that they had reached home. Then we washed the dishes.

The hot summer day was well advanced, when, after a late breakfast, we started on our way to the top of the ridge north of the lake. The first part of the ascent was in heavy timber, but this was soon left behind, and we entered a straggling growth of fir with many open spots from which were had easterly vistas of the mountains lying along the Continental Divide. In great pro-

cession they march along, massively piled against the sky with here and there a cliff glancing in the sun, and vying in whiteness with patches of snow which have persistently defied the heat of summer. Impressive in bulk and fantastic in shape, they certainly give fitting grandeur to the backbone of the continent.

The crest of the ridge was reached at last, and followed over minor dips and rises, brought us to a point on the west end, rocky and precipitous, from which we gained our first view of Big Salmon. Possibly three miles long, it lies in a broad "U"-shaped valley, surrounded by timbered slopes unscarred by forest fires. A strangely sculptured cliff, known as Locomotive Rock, juts high above the ridge on the south, keeping, as it were, lonely vigil over the lake. To the west, at the head of the valley, rise mountains on whose sides hang remnants of the glaciers which in some remote time gouged



THIRTY MINUTES OF ANGLING

A shot was fired as a signal for Henry to bring in his catch. Five minutes later he appeared bringing a string of fish that would have done credit to a far more experienced sportsman.

out the great trough now occupied by lake and stream.

Pictures taken, and lunch eaten, a rough scramble down the rocks brought us again into shady woods, a grateful change from the hot afternoon sunshine. We entered a small draw, which soon deepened and was bridged in places by windfalls, causing us to either bend low and crawl under, or with much exertion to hoist ourselves over. Here, where the moisture gathers and is conserved, grow ferns, lichens, and delicate mosses, with here and there the Solomon's Seal, its row of conspicuous red berries drooping from the nodding stem, and the leaves already yellow from the early frosts. We found cool water oozing out of the damp ground in a tiny pool; trickling away and disappearing, only to reappear in more volume farther down the draw. After scooping out a basin with our hands, we sat and waited for it to clear; resting long in the spot after our thirst was quenched.

It was late afternoon when we reached the lake, for the beauty of these woods invites one to take a leisurely pace, forgetting that anything is more important than to enjoy their loveliness. They are, however, but a fitting introduction to the wonder of the scene which meets the eye as one emerges from their shadowy tranquility to the lake shore. Beautiful as seen from above, embosomed as a jewel in its setting of timber clad slopes, the lake is yet more beautiful from the shoreline, flooded by the golden sunshine of late afternoon, the light glancing and darting from myriads of little waves which

come dancing on to break with a gentle lap, lap, against the pebbly shore. The air, sky—everything, seemed saturated with the splendor of light. But across the lake the blue shadows began to gather under Locomotive Rock, and delicate pencils of shade were cast by the taller trees on the timbered slopes, above the further shore; all being softened by a veil of golden haze.

We lingered in this enchanted spot until sunset, and then, leaving the lake to falling darkness, hurried back to camp. Each of us felt that the climax was passed and that nothing more could add much to the success of the trip. Certainly nothing can spoil our memories of it. Two hours later, seated about the fire, musing more than talking, Henry expressed the secret feeling of all in one sentence: "Let's hit the home trail tomorrow!"

Thus our trip in the Flathead Forest drew to a close. Our journey out was uneventful, leading by a series of forced marches (for when one starts homeward, his zeal to go is bounded only by fatigue), over the Monture trail to Ovando. Two more camps were made along the way, each occupying its niche in the history of the trip. On the last evening we reviewed it all with no little satisfaction. For the time being our "wanderlust" was satisfied, but we nevertheless speculated on a return some day to Big Salmon Lake where, if anywhere in Uncle Sam's forest domain, one may find God's unmarred wilderness.

[NOTE—Supervisor's Headquarters, Flathead National Forest, are at Kalispell, Montana.]

GEMS OF RUBY MOUNTAIN

BY AUGUST ROHWER

FOREST RANGER, HUMBOLDT NATIONAL FOREST

AT the head of a small valley where the elevation is near 9,000 feet and where the Ruby Mountains tower over the stretches of the Humboldt National Forest, are Robison and Soldier Lakes. Like many beautiful recreation grounds in National Forests, this country has no National renown. But for one who wishes to get away from the mad rush of modern life in the city or town the place is ideal. Although only a half mile apart at their sources in the lakes, the streams draining these bodies of water travel far apart only to join again after traveling on different sides of a mountain range for miles. Robison Creek originates in Robison Lake, flows rather hurriedly for a half mile to the edge of the mountain and then plunges madly down a thousand feet.

This is its entrance into Ruby Valley where it joins the Franklin River.

Soldier Lake, a half mile north of Robison Lake drains into Soldier Creek which flows west past Old

Fort Halleck and later joins the Humboldt River. Waters from the same cloud passing over these lakes starting on different courses are widely separated because of the interesting

Often the jewels of outdoor scenery are just the other side of a wall you pass. Or a hedge may rob you of a view magnificent in robes of seasonal colorings. Or you may miss some scene of beauty because your path leads straight ahead and you will not hesitate to explore the byway. Ranger Rohwer here tells of an interesting vacation country in all its pristine wildness which is just a few miles from two great railways and a national auto road. What an opportunity this offers to step aside from over-worn travel lines for even a few brief days and visit this little known but extremely interesting bit of forest wilderness.—Arthur H. Carhart, Editor, Recreation Department.

topographic features here. Other lakes are found here. Deep Lake immediately draws the attention of a traveler. The east shore is a large dam covered with pine and aspen trees. This dam has all the appearances of being artificially constructed. Old settlers, who always cherish tales of the past, say the soldiers at Fort Halleck once tried to sound the depths of this curiously formed

lake but found no bottom.

Camping places are many near these lakes. Meadows dotted with pine and aspen are near by while small springs are plentiful. Robison Lake is well stocked with trout and offers the visitor to the region an ideal fishing grounds.

There is here opportunity for interesting mountain climbing. Half a mile up a gradual slope from the lakes takes one to the top of the mountain on the east side of the little saddle in which the lakes are cradled. From this point a panorama of Ruby Valley and its mountains delights the eye. The Ruby Mountains are very steep and rugged at this point.

A climb in the opposite direction takes one over rougher territory and to a higher mountain top. Here one looks out over the tops of the Wasatch Mountains and in the distance can be seen the lofty caps of Pilot and



DEEP LAKE

Deep Lake is curiously formed. On one side is a formation almost like an artificial dam, while the picturesque limber pine and trim aspen border its edges. Old timers of the locality say that although the lake was sounded no bottom was found.

Silver Island peaks. Four hundred feet below this high point are the two cold lakes where originates Cold Creek. The whole outlook is wild and rough. Looking out to the west one can see the Lamoille Valley, Elko and a long stretch of the Humboldt River.

From June fifteenth to the middle of August the climate is generally very delightful for camping. It is usually dry and it is possible to camp here for many days without even putting up a tent as shelter. There are no unpleasant reptile neighbors for the altitude is too great for them. For one seeking an almost ideal place to recreate the area near Soldier, Deep and Robison Lakes holds many attractions.

This country of high mountains, clear skies and lakes of crystalline waters must be reached by a horseback ride of ten miles from Fort Halleck which is twenty-two miles



A CLIMBING CHALLENGE

A climb to the south takes one to a higher mountain top. One looks out over the tops of the Wasatch Mountains and, in the distance, can be seen many still higher peaks.



THE SADDLE

High in the mountains of the Humboldt, in the saddle between two mountain peaks, and where the water hesitates as to which stream it will seek, nestles Robison Lake, while only a half mile away in the same saddle is Soldier Lake.

from the little town of Deeth, or thirty miles from Elko. Bedding, food, tent and all equipment must be carried in to the camp by horse.

There are no movies here, no jazz bands to split wide open the quiet of the night but just a bit of unspoiled wilderness where one can hunt with camera, fish, climb not too rugged mountains or just rest to a full content-

ment amid interesting and restful surroundings. The gems of Ruby Mountains—the lakes, streams, peaks, and canyons found here—are all yours to enjoy if you will but come and camp near the three lakes that nestle in the high valley amid pine dotted meadows.

[NOTE—Forest Supervisor's Headquarters, Humboldt National Forest, are at Elko, Nevada.]

WHY NOT LABEL TREES

BY BLANCHE C. HOWLETT

WASHINGTON, District of Columbia, probably has more varieties of trees, both native and foreign, than any other city in the world. For this reason, I should like to see the trees labeled both with the botanical and with the common names. If this were done, the Capital City of the United States would become a National Arboretum. Could there be an easier way for the people to know nature than to be introduced to her trees?

Some years ago an attempt was made to label the trees. At the time I was reading Lafcadio Hearn and Sir Edwin Arnold's books on Japan. Sir Edwin Arnold in *Japanica* refers to the cryptomeria trees on the road to Nikko as "the most majestic avenue of giant trees to be seen in all the world." I did not know what a "cryptomeria tree" was and asked a Japanese if he could tell me. The Japanese did not know what "cryptomeria" meant; but as soon as I said the avenue of trees leading to the temple at Nikko are cryptomerias, he immediately knew the kind of tree to which I referred and

replied, "A kind of cedar." A Japanese idea of cedar might be quite different from mine. A few days afterwards, while walking through Lafayette Park, I noticed an evergreen tree marked "Cryptomeria Japonica." All the books in the world could not have given me so definite an idea of what a cryptomeria tree is as did that labeled tree in Lafayette Park. I am familiar with the common names of native trees, but there are trees in that elm-embowered park that are unknown to me. The labels have rusted or fallen. One need not be an artist to appreciate the coloring, especially in winter, of that beautiful bluish-gray beech tree in Lafayette Park, opposite the Belasco Theatre.

Just a few trees in one park have been mentioned, but there are many parks in Washington besides the shade trees on the streets. Iowa Circle is surrounded by horse-chestnut tree. The large pyramidal clusters of cream-white flowers dashed with purple and yellow bloom in spring. In the fall the children are not the only ones who pick up

(Continued on page 264)

FOREST GUIDES DEPARTMENT

SOLAN L. PARKES, CHIEF FOREST GUIDE, EDITOR

The Editor recommends that Forest Guide Troops and also Boy Scouts, who are not yet organized as Forest Guides, read this department carefully every month; study the advice and the information it gives, and discuss it so it will be thoroughly understood. If any further information is desired write to the Editor.

FOREST Guides should know what a forest is. They should be able to identify all of the trees not only in the woods, but along the roads and in the streets of towns and cities. They should also know about forest plants and animals, and everything else in relation to the forests.

This is a big order for any boy—but not an impossible one. It will require both study and actual experience in the forest. It will not come quickly, but slowly and surely. There is much to learn.

What a forest is is well and briefly told by Professor J. S. Illick, one of the best known foresters in the country, who says:

"A forest is a complex community of living things. It is more than a mere collection of trees, for associated with the trees are many other plants and animals, all of which live in close relationship with one another.

"There is a right and wrong way for Forest Guides to find out what a forest really is. Many hours may be spent in schoolrooms, libraries, and parlors studying about the forest and its inhabitants. Such a method has some good points, but there is a better way. The right way to become acquainted with the inhabitants of forests consists in getting ready, going out, hiking right into them, and there beginning a first-hand acquaintance with the many and interesting members of which it is made up.

"Do not plan to become acquainted with all the forest inhabitants on the first trip for there are too many of them. Just as it is impossible to become acquainted with all the inhabitants of a city in a single day, so it is beyond the realm of the possible to learn to know all of the many members of the forest on a single hike.

"A good plan for the first hike to the forest is to list or make a census of all the different groups or classes of plants and animals which you may observe, that is, make no special attempt to name the individuals. This may be done by making a table of two columns, the one with the heading Plants and the other Animals, and listing under each all the living things observed. Only two columns are required, for all living things are either plants or animals."

THE FOREST FIRE SEASON

This is the season of forest fires and the Forest Guides will find much to do in protecting the forests from fire and fighting those which start. The Guides should know how to do both. Professor Illick makes the following suggestions:

1. Do not start a forest fire.
2. Tell all your companions about the damage which forest fires do.
3. Report all forest fires to the nearest forest officer.
4. Learn how to fight forest fires, and take a hand in putting them out.
5. Plant forest trees in vacant corners, waste places, abandoned fields, on barren mountain slopes and other unoccupied forest land.
6. Destroy insects which injure and kill forest trees.
7. Destroy rots, blight, and other fungous foes of the forest.
8. Help clean up the forest by using the dead wood found lying on the forest floor.
9. Cut out only undesirable trees and guard the more valuable ones.

HOW FOREST FIRES START

Someone may have told you that lightning causes many forest fires or that spontaneous combustion may furnish the spark which starts the fires on their mission of destruction. In order that we may get at the very bottom of this important subject, and not be misinformed, let us take advantage of the results of a careful

study which has been made of the causes of forest fires. They may be summarized as follows:

1. Few, if any, forest fires are the result of spontaneous combustion.
2. Lightning does not cause on Eastern forests more than a small percentage of forest fires.
3. Someone's carelessness or neglect causes most of the forest fires which occur each year. No matter what the immediate or apparent cause happens to be the real original cause can in almost all cases be traced back to the carelessness or neglect of some person or group of persons. Carelessly constructed or neglected camp fires, have started many forest fires. The careless throwing away of a burning match, cigarette, or tobacco among dry leaves has been the cause of some of our worst fires. Sparks from engines start many forest fires, but the real cause is the fact that they were not properly equipped with a satisfactory spark arrester, or a satisfactory cleared safety strip was not kept on both sides of the road bed. We all believe in clearing up unsightly and unsanitary places, but too often brush burners choose a windy day or forget to take proper precautions so that the fires which they start cannot get away from them. In many instances those in charge of a fire go away for a while, only to return and find that the fire has escaped and is traveling rapidly over an adjoining woodlot or ascending a steep and heavily timbered mountain slope.
4. Be sure the camp fire is out before leaving it. Take no chances, for you can easily tramp it out, smother it with ground, or soak it with water.
5. Be very careful in cleaning up a camp site. Burn the undesirable material when there is the least danger of the fire getting beyond control.
6. Be as careful with fire in the forest as in your home, for it is an evil doer if it gets beyond control. A good Forest Guide takes no chances with fire in or near the woods, for its actions are treacherous and its destructive power great, if it gets beyond control.

WHAT FOREST FIRES DO

The first thing that Forest Guides should know about forest fires is the fact that they do absolutely no good. They bring no benefits to mankind, for loss and damage are the results of their work. It would require many pages to discuss fully the loss caused by forest fires. The following outline will show some of the principal lines of damage which they do:

1. Forest fires destroy the beauty and value of a region.
2. They destroy the animal and plant life of the forests.
3. They destroy the seeds and seedlings which would develop into stately stands of timber.
4. They kill enormous quantities of growing timber.
5. They consume a large amount of felled timber and other forest products stored in forests.

6. They consume the leaf litter and humus on the forest floor.

7. They impoverish the soil to such an extent that its capacity to produce timber is almost negligible. Briefly, they prevent the production of enormous quantities of needed forest products.

8. They have already made a desert of millions of acres of land.

9. They open the way for the destructive work of insects, fungi, erosion, floods and drought.

10. They sometimes kill live stock, and frequently destroy buildings, crops and fences.

11. They occasionally destroy houses.

12. They cause the loss of human lives.

There appears to be no end to the damage which forest fires do. We cannot let them go on. It is our duty to step in right now and fight them to a finish.

THE WILLOW PATCH

BY BERNARD FLANAGAN

There is nothing so disgusting, causing more command-busting

Than a bushy bunch of willows on your line;
You can hardly battle through them and no cussing seems to do them

Though your sweat rolls out much bitterer than brine.
They are all-fired tough and wiry and they make your temper fiery,

But the compass heads you through their very heart;
Oh, how healthily you swear, when you find you're tangled there

And you know you're badly beaten from the start.

When you've lumbered through the snow for a dozen miles or so

And you've got a strip of forties yet to do,
Then with estimator's luck you've a willow patch to buck
And the compass says you've got to plug it through.

It is then you have to struggle, for each willow seems to snuggle

In the bosom of a dozen nearby trees;
Oh, it does no good to swear, for the willows do not care,

But it somehow seems to set your mind at ease.

Then you try to go ahead but you find it stops you dead
For the willows make a wicker that will hold;

You are seized with dire despair and you pull your matted hair

And a volume more of curses you unfold.

It is nearing supper time and you're verging on a crime
As you smart beneath the ninety-seventh scratch,

Oh, it's wasting time to swear and you wind yourself right there

When you stand and cuss that doggone willow patch.

BLACK LOCUST RECLAIMS WASHED LANDS

BY E. E. MILLER

IN what is known as the upland districts of West Tennessee and Northern Mississippi, there are hundreds of thousands of acres of land that has once been in cultivation but is now so gullied that it is thrown out. The soil of this upland region is supposedly a clay soil, but it contains so large an admixture of sand that it is easily carried away by the heavy rains common to this region. Gullies will start on even a slight slope and when they start, unless something is done to check them they soon grow to an enormous size. There are thousands of them—great red gulches, some into which big buildings could be dropped out of sight. Of course the fields that are cut up by such gullies can be tended, if at all, only in little patches. Usually they are given up to be destroyed or reclaimed by the agencies of nature, and oftenest the agencies of destruction prevail. The problem of preventing erosion and reclaiming the eroded lands in this section is a serious one. The fate of whole farming communities is involved in its solution. Some few years ago, the State of Tennessee began experimenting on these gullied lands by planting black locusts. The work has been carried on long enough to make certain that the planting of locusts will reclaim even the worst wasted areas and bring them in a few years to a stage of profitable production. However, the

appropriation for this work has been so small as to limit the work to a comparatively few demonstration plots. The annual appropriation for all the work of the division of forestry amounts to only \$3,600. Of course, the

reclamation of waste lands is only one line of the forestry work.

The state has been furnishing the seedlings to plant demonstration areas in black locusts. The State Forester has been giving the work of planting and the later care of the planted areas his personal attention. Several dozen such demonstration areas are now scattered over West Tennessee and the demonstration has been so convincing that farmers are beginning to take up the work for themselves. It is not too much to say that the planting of locusts offers the one practical possibility for the reclamation of tens of thousands of acres now

valueless. The steepest banks of the gullies are blown off by dynamite or dragged down with plows and scrapers. Dams of logs and brush are placed across the gullies to catch the sediment that is brought down by the

rains. Above these dams and on the gully banks, the locust sprouts are set out. Usually they are placed some six or eight feet apart each way. They are planted in rows, as far as practical, so as to allow cultivation for the first year or two. After that they are abundantly able to take care of themselves, with only a lit-



TYPICAL GULLIED AREA

Reclamation will stop the gullies and so check the erosion of lands still in cultivation.



THE "BAD LANDS" OF WEST TENNESSEE

Thousands of acres like this—once good land—is hopelessly gullied. Without some method of reclamation established it must be lost forever to the State as agricultural land.

the pruning to train them up in the way they should go.

The growth of the locusts in these gullied lands is remarkable. I have seen trees that would make one fence post in their fourth summer from planting. Other

sprouts, I have seen have reached a height of ten or twelve feet the first year. Like everything else, however, the locust requires some attention to make it a success. Where the young trees have been set out without any preparation or without the building of dams to hold back the soil, growth has been slow. In some cases,

sprouts two or three years old, planted on slopes that still continue to wash, are not much larger than when set out. This work of reclamation would be well worth while if

it did nothing but stop the gullies and so help check the erosion of lands still in cultivation. It does much more than this. It puts on these waste lands a crop that will begin within five or six years of planting to return a revenue that will, if properly handled, keep on indefinitely. Timber for fence posts is scarce in this region. The

railroads ship in cross-ties by the thousands. On many farms, the supply of timber to meet the constant repairs any farm requires is becoming a problem. Black locust groves will, in large measure, solve all these problems. In five or six years from planting, the farmer who has

one of these locust groves can begin cutting fence posts. In fifteen years—possibly earlier in some cases—some of the trees will be large enough for cross-ties. With proper thinning, the growth of the remaining trees would

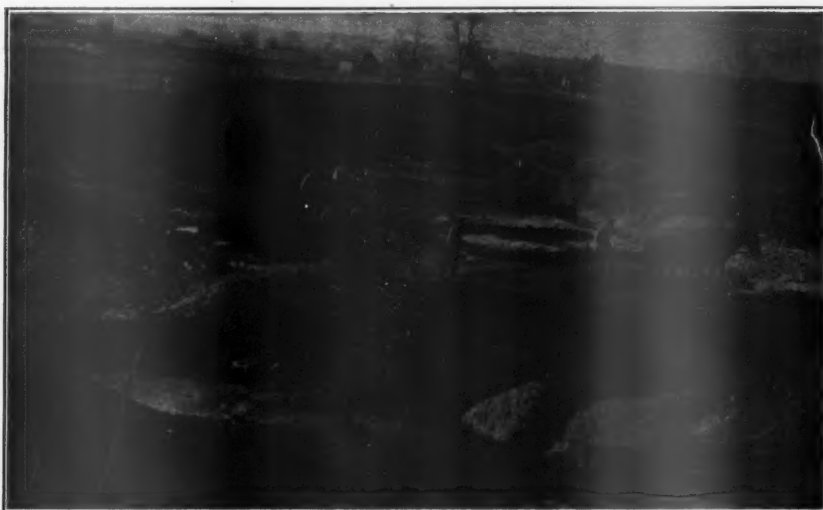
be kept up to a high point. The locust has the ability to reproduce itself and keep a constant supply of young trees on the land if only a little attention is given to the cutting. From being worth nothing at all, these lands may be made to be worth \$200 or \$300 an acre in a very few years. It is hard to find a more depend-

able and a more rapid method of increasing the value of waste lands. This reclamation planting has been done in several counties and numerous communities. Its value

has not yet been realized by the people of the state or even by the people of the gullied sections. The small appropriation made for the work and the lack of interest in it shown by the majority of West Tennesseans is proof enough of this statement. The general scarcity of timber and the quickened interest in all things relating to the future

timber supply have served to call more attention to it lately than it has ever received before and there is reason to hope that not only will this particular branch of work be put on a firm basis, but that the State of Tennessee

(Continued on page 263)



PLOWING IN THE GULLIED LANDS AND SETTING LOCUSTS IN THE FALL OF 1917

The experimental work carried on by the State in the planting of black locust in these areas proves that even the worst wasted areas may be reclaimed and brought within a comparatively short time into profitable production.



THE AREA PLANTED TO BLACK LOCUST, AFTER THREE YEARS

This is the same area in 1920. In 1917 it was planted to black locust in the hope of bringing back the land and the photograph plainly shows the splendid results of this experiment in reclamation.

"DON'T QUIBBLE NOW—GROW TREES,"

TOO much talk and too little action coupled with the call, "Don't quibble now—grow trees," is an example of the editorial comment that has become a torrent since the American Forestry Association took up the direction of an educational campaign for a national forest policy which culminated in the introduction of the Snell Bill in the House. The measure makes a fitting base upon which to work in the new Congress. The stand of President Harding for forest conservation has been widely commented upon and eagerly taken up by his fellow editors. Some of the editorial expressions follow:

Philadelphia North American: Of course the success of such a move depends primarily on the measure of co-operation that will be forthcoming from the various States, and in order to make the bill highly effective, if it is enacted into law, each State would have to match from its own financial resources any assistance offered by the federal government. Need of public action in this direction is beyond question.

Duluth Herald: Unless this country wants to leave its children the cruel legacy of timber lands wholly bare, the nation and the States will take a hint from France and speed up the work of reforestation.

Providence Bulletin: The new bill in Congress is sponsored by the American Forestry Association and favored by several large groups of users of timber—bodies with interests so large and so widespread they are not likely to want to mislead the government into an unprofitable venture. Reforestation is insurance against a form of bankruptcy in national timber resources that is undoubtedly in prospect if the country does not mend its ways.

New York Times: Supported by the ultimate users of wood or of wood products, as well as by members of the Paper and Pulp Association, the American Forestry Association and other kindred bodies, and based upon its own inherent soundness, this measure should promptly become a law of the land. Under such a plan our forests will not only be safeguarded against a repetition of the ravages of the past, but

will be developed and regrown under expert supervision. The sooner a start is made the better.

Bangor Daily Commercial: The Snell bill for the preservation and development of the forests of the country has been receiving a thorough discussion at the hearings before the Department of Agriculture and has been so generally endorsed that it is predicted that it will receive an early passage by the incoming Congress. The bill, as we have already noted, provides

of the Pinchot thesis and the improbability that sufficient support could be obtained for such a wholesale program of nationalization is a practical answer to the other half. Little support is noted for the drastic proposal of Mr. Pinchot who argues that the government shall acquire all standing timber and operate the forests as national property, a step in socialism that is not regarded as desirable in this country.

Chicago Tribune: The Tribune urges the passage of the Snell Bill as a wise conservation measure needed not only in our present situation but for the sake of the future.

Washington Star: There is a measure before Congress, under the title of the Snell Forestry bill which, if made a law, would be a long step in the right direction. It may well be that, aroused to an appreciation of the indicated menace Congress will see the expediency of making the step even longer, of appropriating more than four million dollars for work contemplated under the bill during the coming fiscal year. Several times that sum would be none too much to make an effective start, in co-operation with the States, in rehabilitating one of the most important of American resources. But whether final action when taken is to be on the Snell bill as drafted, or on some measure of larger scope and more generous appropriation, let us have action, and that soon.

Portland Oregonian: Two opposing forestry policies are before Congress. One introduced by Representative Snell which was prepared by users of timber and its products with the aid of National Forester Greeley, would enlist government aid and co-operation with the States and

timber-owners in preserving timber, replanting the forests, consolidating all land in national forests in the hands of the government, and investigating and encouraging the best use of timber. The other, introduced by Senator Capper and prepared by Gifford Pinchot, proposes that the government shall acquire all standing timber and operate the forests as national property.

The Snell bill, being the combined work of timber-owners, lumbermen, wood-using industries, paper manufacturers, publishers, forestry and conservation associations and of the United States Forester, is convincing evidence of the desire of these interests to preserve and perpetuate the timber supply

What Will Mother Say When She Finds He Had It "Clipped?"



Darling, for the New York Tribune Syndicate.

for a national policy of fire prevention, the stimulation of production, proper conservation and federal assistance to these ends.

A rival bill prepared by Gifford Pinchot and introduced by Senator Capper of Kansas, proposes that the government shall acquire all standing timber and operate the forests as national property. This would be heroic treatment indeed and only to be justified upon Mr. Pinchot's somewhat cynical theory that private interests are virtually indifferent to the destruction of the forests and that the States, even with federal aid of cash and expert advice, would be unable to meet the situation. The personnel of the advocates of the Snell bill is a sufficient refutation of the first part

SAYS THE MILWAUKEE JOURNAL

and, to that end, the National Forests, and to promote their best use.

Milwaukee Journal: Some politicians, and strange to say some foresters, object to the Snell national forestry bill on the ground that it does not go far enough. This opposition is ill-timed and short-sighted.

The Snell bill provides for greater fire protection than the forests have yet received, the most urgent need now. It also provides for reforestation denuded sections of the national reserves and for enlarging these reserves by adding to them other public lands and private lands to be purchased. It provides for reforestation, for intensive nursery work and research work, including the more economical use of forest products. It offers federal aid to States which protect their forests and reforest their lands.

The bill embodies what is the most advanced and thorough forestry policy yet expressed in a legislative measure. It provides authority and money to prevent the destruction by fire of more of our diminishing timber supply and to begin the task of renewing that supply.

These things are urgent. Every year our forests are damaged by fire. Every year's delay in reforestation means loss in time and opportunity. The need is to save the trees that still stand and plant new ones as soon as possible.

Tacoma Tribune: It (the Snell bill) is particularly necessary at this time because it establishes a definite forest policy, and will effectively provide for an adequate and continuous supply of timber from federal, State and privately owned forest land.

Chicago Post: Hearings may develop points in which the Snell bill should be amended; but in its aims and general outline it represents legislation of the kind which must be commended by sound sense and foresight as true economy.

Lexington (Ky.) Leader: There is a bill before Congress which should enlist the sympathy and support of every intelligent and patriotic man, woman and child in America. It is a bill introduced by Mr. Snell which provides for an appropriation of a million dollars annually to be used in co-operation with the several States in fighting forest fires outside of government forest reserves, and an additional ten mil-

lion dollars a year for the extension of the public forest land, for reforestation, and other items in the national policy of conservation. We have been almost as foolish and improvident as the Chinese, who have cut off their wonderful forests and ruined their country.

Binghamton Press: We hear a great deal about thrift, but as a nation we are not thrifty. In the matter of our timber resources, we are like a man who has been living on his capital instead of investing it and living on the income. If we keep on cutting more than we plant, and do not check the waste by forest fires, we are

A CALL FOR ACTION



Thurlby, in the Seattle Daily Times.

bound to destroy the supply. Not the newspapers and book publishers alone are suffering from this waste of timber. Besides builders, every manufacturer in need of lumber feels the increasing shortage. Congress at last is preparing to take action to check the destruction of our timber supply and to replace what is cut. Of the two bills now before it for action, the one introduced by Representative Bertrand H. Snell is much the more comprehensive and effective. It is an ambitious program, and a wise one. If enacted into law it will open the way for putting an end to the wanton waste of our timber resources and eventually will enrich the nation in amounts far beyond the relatively small sum expended.

Portland Herald: If Maine gave the same attention to the forests that Switzer-

land is giving it would be one of the most wealthy States in the Union, per capita, and would attract to it a much larger number of visitors both summer and winter. It is only of recent years that any conception of the wasted wealth in forests has appealed to its citizens. The time to correct the evils of former years is now.

San Antonio Express: The Snell measure is in rather sharp contrast to the Capper bill, which was prepared by Gifford Pinchot, and it is believed to meet more nearly the views of the interests vitally concerned and of the public as well. The Snell bill should be enacted and appears to have met with general approval.

Moline Dispatch: Uniformed citizens have been slow to grasp the urgency of a constructive and effective forestry policy because a timber shortage is a new thing to them. They do not realize all that is implied in the fact that it takes fifty years—rarely less, and in some cases more—to produce a crop of timber.

Bayonne Review: Every newspaper in the country is personally interested in the adoption of a national system of forest protection and preservation and last year's experience in the high cost of news print, a part of which is now being paid by every newspaper reader, makes welcome the promise which is held forth in the program.

The committee named is made up of prominent leaders in the wood-using industries, of famous technical foresters, members of the American Forestry Association, newspaper publishers, and many other industrial leaders. Newspaper readers who want the price of their favorite paper brought back to pre-war rates should urge the Congressman of the Eighth New Jersey District to vote favorably for the Snell bill.

Missoula Sentinel: The national forestry program, now before Congress, calls for \$11,000,000. That seems like a lot of money, but, really, it is a mighty small sum when the importance of trees to America is considered. The Western States are especially concerned in the forestry program. Millions are starving in China because great portions of that country have been denuded. No matter what the urge for economy, we cannot subscribe to any plan to cut the \$11,000,00 asked by the forestry program. The whole country needs it.

THE RATE OF DEVELOPMENT OF THE CONES OF THE NORWAY SPRUCE

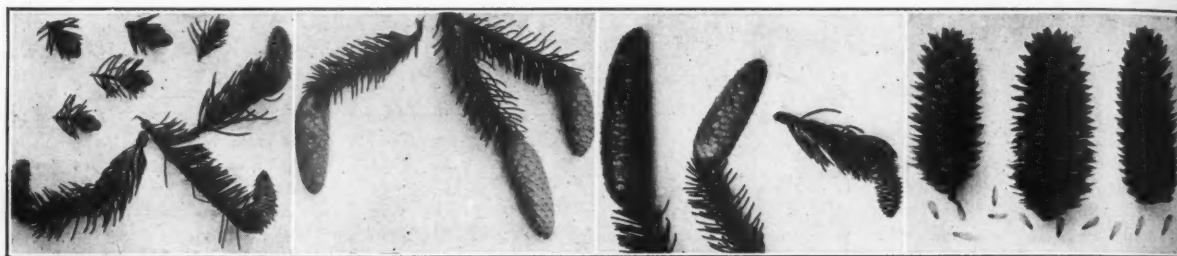
J. BEN HILL, PENNSYLVANIA STATE COLLEGE

IN collecting material for class study, the writer had occasion to make several collections of the cones of the Norway spruce (*Picea excelsa*), which furnish data on the rate of development of the ovulate cones of the species. In the latitude of central Pennsylvania, both staminate and pistillate cones appear about in the middle of May, the exact date varying with the season.

The staminate cones come out a few days in advance of the pistillate, the latter about the time the pollen is shed. The young pistillate cone of this species is one of the most beautiful of the so-called "flowers" of the conifers.

difficult to locate at first, they can be found very readily after a little practice.

Though it is well known that the spruces mature their cones within one year and shed their seed the following spring, the rate of growth is perhaps less well known. At the time of pollination, the pistillate cone of the Norway spruce is about one and one-half inches to one and three-quarter inches in length. Cones of this type were collected May 12, approximately at the time of pollination. (Fig. 1.) A second collection was made May 24. This collection showed the cones very heavy



INTERESTING PHASES IN THE DEVELOPMENT OF THE CONE

The first section shows staminate and pistillate Strobili of the Norway Spruce, collected about the time of pollination, May 12, and the second section shows the pistillate cones collected May 24. The third section gives a comparison in size of the young pistillate cone of Norway Spruce collected May 12, one May 24, and one in midsummer. The latter is full grown, while the fourth figure shows mature cones of the Norway Spruce, shedding seed.

They are colored a bright red and present a soft velvety appearance. The young recurved scales of the cones are unusually large and petal-like structures aggregated in a body almost floral in outline.

The small number of the pistillate cones as well as their position renders them relatively inconspicuous in the presence of the multitude of staminate cones, which generally cover the tree. These pistillate cones grow only on the topmost branches or at the extreme tips of the long horizontal branches. At pollination time each pistillate cone stands erect on the tip of the branch which bears it. While their scarcity makes them somewhat

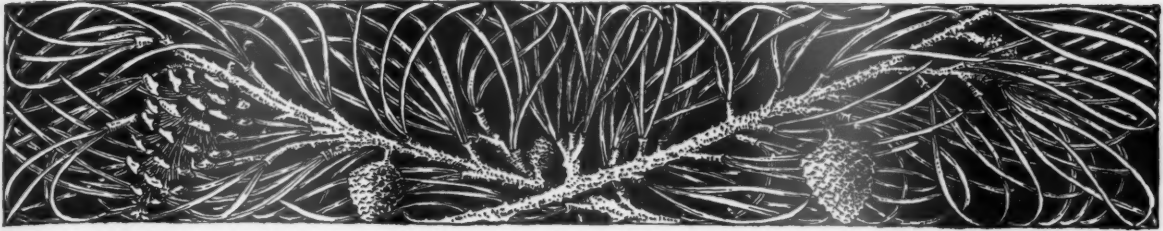
and pendant instead of erect as on the former date. (Fig. 2.) These cones are at least half grown as shown by an inspection of Figure 3, which shows the cones of May 12 and May 24 compared with one taken in midsummer, which had attained its full size. The interesting feature of this observation is the fact of the extremely rapid growth in the early days of the development as compared with the usual slow growth of the younger cones of the conifers as familiar in the pines, which after a year are scarcely larger than the flower when it first opens. Figure 4 shows the cones of the Norway spruce as they appear when open and shedding their seed.

SAVE THE DOGWOOD!

BY INEZ M. HARING

IF popularity may be judged by the frequency of picking, the flowering dogwood may be said to be one of our most popular wild shrubs. From the time it begins to bloom in the spring, until the last flower has dropped, there is a continual procession, both afoot and in the automobiles to its haunts in the woods. The white spread of blossoms, as seen from the roadside, acts as a challenge to the passerby to enter and pick. And what a generous response! Boys daily come trooping back to town, with their arms full to dropping; automobilists return from their afternoon's ride in the country, their wind shield covered with the snowy white blossoms, and huge branches tied upright from the running board.

A successful day! But let us ask ourselves, if it was success? Rather, was it not thoughtless vandalism? To destroy one of our most beautiful flowering shrubs and thus cause it slowly to disappear from certain parts of the country, surely that cannot be counted as success. The continual breaking of the branches and the cutting down of the whole of the smaller trees, is diminishing our dogwood to such a degree, that there is danger of our losing these shrubs almost entirely from our woods, in localities accessible to towns, villages, and cities. The time has come for thoughtful people to take a hand and stop this relentless destruction and save the dogwood.



TREE STORIES

SPIRITS IN TREES

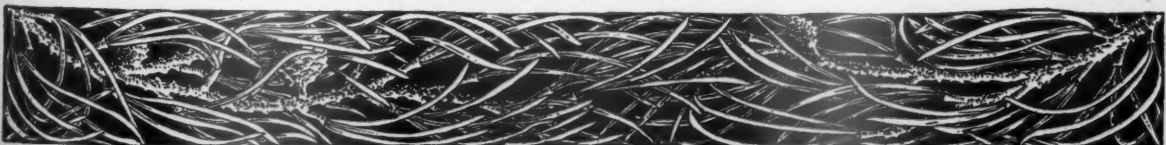
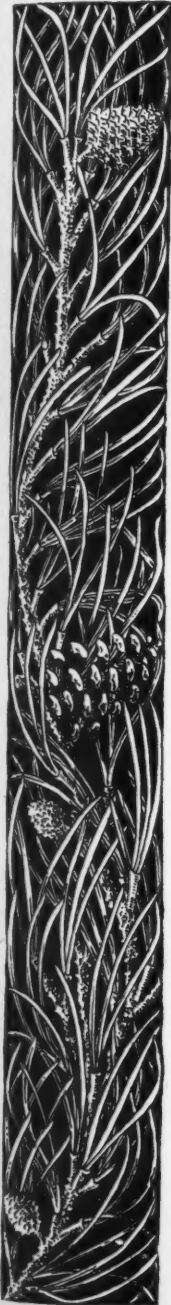
By Mary Isabel Curtis



DID you know, children, that there were stories about all the trees? The Greeks, who lived long ago, believed that a beautiful spirit called a dryad lived in every tree. This dryad was born with the tree and died with it. As long as the tree lived the dryad had a lovely time. She played with other dryads in the forests and sang songs in the leafy branches of her tree. If anybody stopped on a warm day to rest beneath the shade of a tree in the woods, he might perhaps see a dryad and she would come and talk to him in a sweet, rustling, little voice that sounded like a soft breeze stirring the leaves of the tree.

But no dryad wanted to be caught. She would always keep just out of reach, and if anybody tried to capture her—pff!—she would vanish as completely as the gas from a punctured toy balloon.

Although in these days we are very matter-of-fact, there are places where people still believe in tree spirits, and in some parts of Austria the old peasants always beg the pardon of a tree before they fell it. In Bulgaria if a peasant has a tree which has borne no fruit, he will go out on Christmas Eve with an ax and threaten to cut down the tree. Another man will go with him and will say: "Do not cut down this tree, it will soon bear fruit." Three times the peasant will raise his ax and three times his friend will beg him to spare the life of the tree. They will then go away, and they believe that the tree, fearing no mercy will be shown next time, will bear fruit in the future.



CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PAST PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

A LARGE number of annual meetings of interest to forestry were held in Montreal this year and very largely attended. The Canadian Lumberman's Association had a very successful meeting. The Canadian Society of Forest Engineers met, for the first time, for a full day, and had a most enjoyable and profitable meeting. The officers elected were M. A. Grainger, of British Columbia, president; Dr. C. D. Howe, Dean of the Forestry Faculty of Toronto University, vice-president; R. D. Craig, of the Commission of Conservation, secretary; and T. W. Dwight, Dominion Forestry Branch, treasurer. The papers read were, "Mutual Help and Salaries," "Relation of Foresters to Logging Departments," "What Answer Can We Give When We Are Asked How Timber in Eastern Canada Should be Cut by Pulp and Paper Companies," "A Method of Forest Survey," "Aerial Forest Surveys," "Forestry Engineering as a Profession." A good many foresters from New England were present and it is hoped that more American foresters will come to the meeting next year.

The Canadian Pulp and Paper Association held a very interesting and profitable meeting and it is most encouraging to note that the association placed itself most emphatically on record as being in favor of better forestry methods in logging, logging for a sustained yield, better fire protection and closer utilization. The association also voted money for research work and much good should come from this. The first volume of the series of textbooks for use in educational work among employees of the mills was shown, that on mathematics. This is an excellent book and every effort has been made to have it thoroughly practical, all the problems and examples having a direct bearing on the work the men find in their regular routine. The succeeding volumes of the series will probably be ready before the end of the year.

At the meeting of the Woodlands Section of the Association a committee was appointed to confer with the Quebec Government on the establishment of a Ranger School to train men for work in the woods. This school, it is hoped, will be established by co-operation between the industry and the Government and it will probably follow somewhat along Swedish lines, in that it will not be open to the general public, but only to men nominated by the Government or the companies, so that only those who are thought fit to be rangers and who are reasonably sure to continue in that line of work will be trained. The training to be given will be as practical as it is

possible to make it and it is hoped that a corps of trained woodsmen for use in fire protection, woods inspection work and scaling can be built up. The Government will be asked to authorize such a school and make an appropriation for it at the present session of the legislature. A committee was also appointed to co-operate with one appointed by the American Pulp and Paper Association to co-ordinate and encourage experimental work in better logging and utilization methods. A questionnaire is being prepared for distribution asking different firms what kind of experiments they are at present carrying on, and when this information is received it will be digested and those firms which are already working along certain lines will be given all the information along those lines and may also be given financial assistance by the other companies. A resolution was also adopted asking the Dominion Government to place the Branches of the Canadian National Railways, which are not already under the Dominion Railway Board in matters of fire protection, under the jurisdiction of the board.

The Quebec Forest Protective Association, which is a federation of the Co-operative Fire Protective Associations, also met and discussed the question of railway fire protection. It was shown that the National Transcontinental and the Intercolonial Railways, both operated by the Dominion Government were a great menace to the forests, and were setting a great many fires, their record in this respect being much worse than that of privately owned roads. A resolution was passed asking the Government to place these two lines under the jurisdiction of the Dominion Railway Commission as regards fire protection regulations. The Government of Quebec showed again its desire to do everything possible for its forests and to co-operate with the lessees by offering to place all lands still unleased by the Government under the Co-operative Fire Protective Associations, paying the same fee per acre for protection as is paid by the lessees. This marks a long step forward in fire protection.

The Canadian Forestry Association held its annual business meeting and also passed a resolution in regard to railway fire protection similar to those passed by the other associations, and made plans for enlarging and vigorously prosecuting its propaganda activities. The association now has 12,000 members, a secretary with two assistants, and it is hoped to add a French speaking forester for the work in the Province of Quebec.

Mr. M. A. Grainger, late Chief Forester of British Columbia, has organized the Timber Industries Council of British Columbia, with headquarters in Vancouver, and becomes its managing director. This will federate the efforts of the Lumber and Shingle Manufacturers Association, The British Columbia Loggers Association, The Mountain Lumbermen's Association, The Shingle Agency and The British Columbia Timberholder's Association. The objects of the council will be to promote co-operation and stability in the forest industries, to provide central facilities for the industries, to collect and circulate information of interest to the industries as a whole. The work of the council will not overlap that of any other organization and will give a strong central body which can look after the general welfare of the industry, consolidate and defend it. This is a most important forward step.

The diameter limit system at present in force in Quebec and New Brunswick is still exciting a good deal of interest. In New Brunswick some demands are being made for a reduction in the limit and in Quebec efforts are being made to fix it at some suitable figure, as the constant changes of the past few years make it hard for operators. This is a very important question and it is hoped that it can soon be satisfactorily settled.

The Air Board, under the direction of Colonel Leckie, is having some pictures taken of forests with the snow on the ground, to see whether winter pictures are any more favorable for the study of timber conditions than those taken in the summer. The Canadian Air Board is doing remarkable work in promoting civil aviation. There is a remarkable absence of red tape and of the air of superiority which usually pervades Government Bureaus, and valuable experiments are being carried out and results published which are of the greatest value to the public. Their co-operation with civil agencies is splendid and will undoubtedly do much to place Canada in a fine position in civil aviation.

The Canadian Branch of the Aerial League of Great Britain held its annual meeting in the Ritz-Carlton Hotel in Montreal on the eleventh of February, when a report on the Air Board's activities for the past season was made and a paper read on aviation in forestry with slides showing how aerial photographs are used in mapping and estimating timber lands.

A bill has been introduced and has passed first reading in the Quebec Legislature

(Continued on page 263)

ATKINS

SILVER STEEL SAWS

ATKINS SAWS play a prominent part in the manufacture of shingles.

The Inserted Tooth Saw at the top of the illustration is specially adapted for cross cutting bolts for shingle manufacturers.

Our Shingle Saws as well as other Circular Saws, Wide Band Saws and Cross Cut Saws are favorites with shingle producers because of the high quality of SILVER STEEL out of which they are made.

Our exclusive tempering processes and improved methods of manufacture have made them known as

"THE FINEST ON EARTH"

Write for latest catalog to the nearest point below. We want your orders for new Saws, Saw Tools and repairs. Send us your specifications.

E.C. ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE

Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks In The Following Cities:

Atlanta
Memphis
Chicago
Minneapolis

New Orleans
New York City
Portland, Ore.
San Francisco

Seattle
Paris, France
Sydney, N. S.W.
Vancouver, B.C.



THE NATIONAL ENGRAVING CO.



1337-1339 F STREET, N.W.
WASHINGTON, D.C.

**ENGRAVERS
DESIGNERS
AND
ILLUSTRATORS**

**3 COLOR PROCESS WORK
ELECTROTYPES
—
SUPERIOR QUALITY
& SERVICE**

Phone Main 8274

YOUR BOY'S SUMMER

MAKE IT COUNT

*for his health, happiness, habits, man-
liness, by giving him eight glorious
weeks in this boys' paradise
of the Maine Woods*

CAMP QUAN-TA-BA-COOK

near Belfast, Me., the lake camp with
ocean air. For real boys, 8 to 16 years

Well equipped for comfort and sport.
Adequately supervised. For pro-
spectus, address

H. PERCY HERMANSEN

**Tower Hill School
Wilmington - Delaware**

Plant Memorial Trees

BOOK REVIEWS

The Romance of Our Trees, by Ernest H. Wilson (Doubleday Page). Illustrated.

Trees have figured largely in religion, in mythology, in social and economic life, in art—indeed there is no form of human effort that has not been touched with the benign influence of trees.

In this volume has been assembled an extraordinary body of facts about trees; a practical book for its exposition of their uses, and a fascinating book for its continual revelation of their beauty and romance. It is beautifully illustrated with pictures of historic and characteristic trees.

Cross Country Ski-ing, by Arnold Lunn (Dutton). Illustrated.

The aim of this little book is severely practical. The author, long a devotee of this famous Alpine sport, writes from the richness of practical experience and the result is a handbook for the beginner with much of interest for the experienced runner. After an introduction which is not without humorous reference to the etiquette of the person who joins a party of experts while knowing nothing about the use of skis, the author treats, in detail, the subject of "Equipment," which is followed by chapters on "Uphill and Straight Running," "How to Ski," and "The Elements of Snowcraft," which he has had rare opportunities of studying during four entire winters in the high Alps.

The need for out-of-door winter recreation has created keen interest in ski-ing

"DAN BEARD'S" New Outdoor Book

AMERICAN BOYS' HANDY BOOK OF CAMP-LORE AND WOODCRAFT

Dan Beard tells how to do things right in the woods. Beginning with the making of many kinds of fires, he reveals the different things one should know about woodcraft, camp kitchens, camp cooking, the use of dogs, making of packs, preparations for camping, pioneering and many other things. The 377 snappy illustrations by Dan Beard himself show "just how.".....\$3.00

ANIMAL INGENUITY OF TODAY

By C. A. EALAND, M.A. The author's love of nature is shown on every page. He describes the skill, clever devices, and stratagems of birds, reptiles, insects, and other forms of animal life—how they order their lives, and protect themselves. The world of nature is a real wonderland, and Mr. Ealand the best sort of a guide through it. Profusely illustrated.....\$2.25

which makes this practical little volume of value to all lovers of winter sports.

The Book of the 20th Engineers.

Under the title of "Twentieth Engineers, France, 1917-1918-1919," dedicated to "our unforgotten comrades" comes this story of the greatest regiment in history. "A History of the Twentieth Engineers," say the editors, "would be, in the main, a resume of output and shipments, feet B. M. and metergauge, Clark 20s and Tower 3-saws, steres and kilos, operation strengths and acquisition factors. To us, the men who lived that history into being, our service was so rich in things to remember, so filled with things we cannot forget, that the actual record of our technical achievements, and the imposing records of our executives, we leave for others to tell. This book is the story of 18,000 men who went over to France to cut lumber because it was needed to win the war. We are endeavoring to tell the story as we told it to our folks when we got home—our comings and goings, our good times and bad times. . . . The Twentieth Engineers was not one of a line of temporary outfits. We were the biggest regiment in the world, we were unique in military annals. We were not recruited hit-or-miss, nor gathered in by the numbers. Every man had to prove that he was qualified for responsible duty when he joined and God knows his proofs were put to the test when we got across. Of all the outfits that made up the American Expeditionary Forces, probably none had a higher percentage of men fitted for skilled and exacting service and ready to deliver that service without the traditional discipline that all good military writers tell us is necessary to make a soldier do his duty. We did our duty because that's what we went there for. We knew there would be no medals, and there were none. We were the only outfit without which our war could not have been won, and we knew that too." The smashing records of daily production of this huge regimental organization stand alone as evidence of unparalleled achievement. The fame and the high praise which has come to the Twentieth from all quarters is richly deserved.

Seeing the Far West, by John T. Faris (Lippincott). Illustrated.

Americans need to wake up to the fact that in their own west is scenery that is beyond compare.

Here is not only a wonderful panorama in text and illustrations of the scenic glories of the States, from the Rockies to the Pacific, but also an intensely interesting narrative recounting bits of history and romance and overflowing with personal observations, which makes this volume valuable and entertaining both to those who can visit the Far West, and to those who must travel by their own fireside. Almost every spot of beauty and in-

BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Filibert Roth.....	1.50
FOREST REGULATION—Filibert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.35
LUMBER MANUFACTURING ACCOUNTS—By Arthur F. Jones.....	2.10
FOREST VALUATION—By E. H. Chapman.....	3.10
CHEMISTRY OF PULP AND PAPER MAKING—By Edwin Sutermeister.....	6.10
CHINESE FOREST TREES AND TIMBER SUPPLY—By Norman Shaw.....	2.50
TREES, SHRUBS, VINES AND HERBACEOUS PERENNIALS—By John Kirksgaard.....	2.50
TREES AND SHRUBS—By Charles Sprague Sargent—Vols. I and II, 4 Parts to a Volume—Per Part.....	5.00
THE TRAINING OF A FORESTER—Gifford Pinchot.....	1.35
LUMBER AND ITS USES—R. S. Kellogg.....	2.15
FORESTS, WOODS AND TREES IN RELATION TO HYGIENE—By Augustine Henry.....	5.25
DEVELOPMENT OF FOREST LAW IN AMERICA—By J. P. Kinney.....	2.00
STUDIES IN FRENCH FORESTRY—By Theodore S. Woolsey.....	6.10
FOREST PHYSIOGRAPHY—By Isaiah Bowman.....	5.10
KEY TO THE TREES—Colman and Preston.....	1.50
THE FARM WOODLOT—E. G. Chayne and J. E. Wendling.....	1.75
IDENTIFICATION OF THE ECONOMIC WOODS OF THE UNITED STATES—Samuel J. Record.....	2.00
PLANE SURVEYING—John C. Tracy.....	3.50
FOREST MENSURATION—Henry Solon Graves.....	4.00
FOREST PRODUCTS, THEIR MANUFACTURE AND USE—By Nelson Courtland Brown.....	4.15
THE ECONOMICS OF FORESTRY—B. E. Fernow.....	1.61
FIRST BOOK OF FORESTRY—Filibert Roth.....	1.10
PRACTICAL FORESTRY—A. S. Fuller.....	1.50
PRINCIPLES OF AMERICAN FORESTRY—Samuel B. Green.....	2.00
TREES IN WINTER—A. S. Blakeslee and C. D. Jarvis.....	2.00
AMERICAN WOODS—Romeyn B. Hough, 14 Volumes, per Volume.....	1.50
Hand Morocco Binding.....	10.00
HANDBOOK OF THE TREES OF THE NORTHERN U. S. AND CANADA, EAST OF THE ROCKY MOUNTAINS—Romeyn B. Hough.....	8.00
Half Morocco Binding.....	10.00
GETTING ACQUAINTED WITH THE TREES—J. Horace McFarland.....	1.75
HANDBOOK OF TIMBER PRESERVATION—Samuel M. Rowe.....	5.00
TREES OF NEW ENGLAND—L. L. Dame and Henry Brooks.....	1.50
TREES, SHRUBS AND VINES OF THE NORTHEASTERN UNITED STATES—H. E. Parkhurst.....	1.50
TREES—H. Marshall Ward.....	1.50
OUR NATIONAL PARKS—John Muir.....	1.91
PRACTICAL FORESTRY—John Gifford.....	2.50
LOGGING—Ralph C. Bryant.....	4.65
THE IMPORTANT TIMBER TREES OF THE UNITED STATES—S. B. Elliott.....	2.50
MANUAL OF FORESTRY—VOL. I—Ralph C. Hawley and Austin F. Hawes.....	3.60
THE PRINCIPLES OF HANDLING WOODLANDS—Henry Solon Graves.....	2.60
SHADE TREES IN TOWNS AND CITIES—William Solotaroff.....	3.60
THE TREE GUIDE—By Julia Ellen Rogers.....	1.00
MANUAL FOR NORTHERN WOODSMEN—Austin Cary.....	2.12
FARM FORESTRY—Alfred Ackerman.....	.57
THE THEORY AND PRACTICE OF WORKING PLANS (in forest organization)—A. B. Recknagel.....	2.60
ELEMENTS OF FORESTRY—F. F. Moon and N. C. Brown.....	3.60
MECHANICAL PROPERTIES OF WOOD—Samuel J. Record.....	2.60
STUDIES OF TREES—J. J. Levison.....	2.10
TREE PRUNING—A. Des Cars.....	.45
THE PRESERVATION OF STRUCTURAL TIMBER—Howard F. Weiss.....	1.00
SEEDING AND PLANTING IN THE PRACTICE OF FORESTRY—By James W. Toumey.....	4.10
FUTURE OF FOREST TREES—By Dr. Harold Unwin.....	2.25
FIELD BOOK OF AMERICAN TREES AND SHRUBS—F. Schuyler Mathews.....	2.00
FIELD BOOK OF WILD BIRDS AND THEIR MUSIC—By F. Schuyler Mathews.....	2.00
FIELD BOOK OF AMERICAN WILD FLOWERS—By F. Schuyler Mathews.....	2.00
FARM FORESTRY—By John Arden Ferguson.....	2.10
THE BOOK OF FORESTRY—By Frederick F. Moon.....	2.10
OUR FIELD AND FOREST TREES—By Maud Goling.....	1.50
HANDBOOK FOR RANGERS AND WOODSMEN—By Jay L. B. Taylor.....	3.10
THE LAND WE LIVE IN—By Herbert Price.....	1.70
WOOD AND FOREST—By William Noves.....	3.00
THE ESSENTIALS OF AMERICAN TIMBER LAW—By J. P. Kinney.....	3.00
HANDBOOK OF CLEARING AND GRUBBING, METHODS AND COST—By Halbert P. Gillette.....	2.50
FRENCH FORESTS AND FORESTRY—By Theodore S. Woolsey, Jr.....	3.10
MANUAL OF POISONOUS PLANTS—By L. H. Pammel.....	5.35
WOOD AND OTHER ORGANIC STRUCTURAL MATERIALS—Chas. H. Snow.....	5.00
EXERCISES IN FOREST MENSURATION—Winkenwerder and Clark.....	1.50
OUR NATIONAL FORESTS—H. D. Boerker.....	2.50
MANUAL OF TREE DISEASES—Howard Rankin.....	2.50
THE BOOK OF THE NATIONAL PARKS—By Robert Sterling Yard.....	3.10
THE STORY OF THE FOREST—By J. Gordon Dorrance.....	.65
FOREST MANAGEMENT—By A. B. Recknagel and John Bentley, Jr.....	2.60
THE FOREST RANGER AND OTHER VERSE—By John Guthrie.....	1.60
TIMBER, ITS STRENGTH, SEASONING AND GRADING—By H. S. Betts.....	3.10
THE HISTORIC TREES OF MASSACHUSETTS—By J. R. Simmons.....	3.65
TIMBERS—AND THEIR USES—By Wrenna Winn.....	5.15
THE PRESERVATION OF STRUCTURAL TIMBER—Howard F. Weiss.....	3.50
THE UNITED STATES FOREST POLICY—By John Lee.....	5.15
THE KILN DRYING OF LUMBER—By Harry D. Tiemann.....	4.65
MODERN PULP AND PAPER MAKING—By G. S. Witham, Sr.....	6.15

* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

terest is described. The author, while not slighting scenes already made delightfully familiar by many writers, has sought to give emphasis also to regions of which little has been said—among others, the great National Forests, whose beauties were seen in the course of more than three thousand miles of travel far from railroads; the National Parks and Monuments, especially those opened in recent years, including Zion Canyon, that wonder of Southern Utah, which but one recent volume has touched upon; the deserts which silently and compellingly call to the traveller who hurries across them by train; and the amazing lava-built regions of Central Oregon, east of the Cascades, which will be better known to Americans when there is a through railroad from Klamath Falls to the Columbia.

History of the First Battalion Old Tenth Engineers (Forest).

With cordial acknowledgment by "Submarine Pete" to all of the men who helped in its compilation as a foreword, the "History of The First Battalion Old Tenth Engineers" steps out—a book which will find a warm place in the heart of every man lucky enough to count himself a member of the "Old Tenth." It was from the Tenth that the Twentieth sprang—that magnificent organization known as the largest regiment in the world, with a record of production and achievement behind the lines never before equalled in the history of any war. This roster, or history will offer a pleasant reminder of their days in sunny (?) France to the men of the Old Tenth. That they "produced the goods" is unquestioned, their contribution toward victory was vital, and their necessity to the success of the cause over there attested by the fact that "General John J. Pershing handed us the flowers in General Orders after every big drive." The book is a creditable piece of work, in keeping with the men whose deeds it records.

Guide to Yosemite, by Ansel F. Hall, Sunset Publishing House.

Every lover of the great out-of-doors looks forward to the time when he may have the time and money to see some of the natural beauties and grandeur to be found in the National Parks. It is, of course, difficult for him to choose between these best pieces of nature's handiwork but because of the concentration of natural wonders within its borders and the rugged grandeur of its granite peaks Yosemite will certainly be among the first two or three to be considered. When he does go to this wonder spot among the people's playgrounds, he will find this little pocket volume of ninety-eight pages a constant pleasure and a veritable mine of information. Mr. Hall has been a ranger in the National Park Service since his graduation from the University of California Forest School in 1916.

He knows the great park intimately from the flower carpeted valley to the peak of Cloud's Rest, and the hand-book reveals this knowledge at every turn of the page. After a few pages of entertaining description of notable features and brief historical

data, the first half of the book takes up in order the six principal road trips which can be made within the park starting at Yosemite Village. Each one of these trips is described in detail and prominent and interesting points to be seen while on the

FORESTERS ATTENTION

AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITIONS WANTED

WANTED—Position as City Forester. Technically trained and experienced forester. 30 years old. Have had 5 years experience in city forestry, tree surgery, landscape work. Box 2010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-5-21)

GRADUATE of a recognized forestry school having had several years practical experience in all phases of forestry, both public and private, and experienced in portable logging operations, desires to make a change. Will consider any proposition in any part of United States or Canada. Box 2030, care American Forestry Magazine, Washington, D. C. (2-4-21)

TECHNICAL FORESTRY GRADUATE, B. S. 1908, M. S. 1914, desires position as City Forester. Twelve years practical experience in tree surgery, planting, transplanting, spraying, orchard care, improvement cuttings and landscaping, including making and execution of plans. Employed at present. References if desired. Married, age 41. Box 2020, care American Forestry, Washington, D. C. (2-4-21)

YOUNG MAN, 30 single, technical training and experienced in forestry and engineering, also first-class knowledge and experience in accounting and office work, desires position offering opportunity for the future. Address Box 2000, care AMERICAN FORESTRY. (2-4)

BUSINESS MAN with technical forestry training and experience, a specialist in aerial mapping and patrol, experienced in protection, cruising and administration, desires responsible position. Now engaged in economic study of paper industry. Address Box 980, care AMERICAN FORESTRY, Washington, D. C. (2-4)

YOUNG MAN WITH WOODS EXPERIENCE and college and military training, desires position in connection with management of forest lands on large estate. Address Box 990, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4)

GRADUATE FORESTER, 31 years old, married, ex-service man, wants position as Forester. Private estate or operating pulp company preferred. Have had 10 years experience in forestry work and practical lumbering. Address Box 2040, care AMERICAN FORESTRY, Washington, D. C. (2-5-21)

WANTED—Position with lumber company. Graduate of 4-year college forestry course. Experience in wood technology, and the grading and selling of hardwood and yellow pine lumber. Address Box 2050, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C.

MARRIED MAN 30 years old, energetic, industrious and systematic, with two years training in forestry, wishes permanent position with a paper and pulp company. To begin with is willing to do most anything. Address Box 2055, care AMERICAN FORESTRY, Washington, D. C. (3-8-21)

TECHNICAL FORESTER with considerable experience in various phases of practical forestry and sawmill work, desires position with manufacturing concern in the East or Middle-West. Dry-kiln work, offering opportunity for development preferred. Address Box 2060, care AMERICAN FORESTRY, Washington, D. C.

YOUNG MAN, 26, single, technical trained and practical experience in forestry, tree surgery, landscaping and orchard care, wants to get in business for himself as city forester in an excellent location anywhere in the United States. Will also consider position as forester on large estate. Employed at present and best of references. Address Box 2065, care AMERICAN FORESTRY Magazine, Washington, D. C.

POSITION WANTED by young graduate forester. Six years practical field work in forestry and lumbering. Am now employed but desire change. Box 2075, care AMERICAN FORESTRY, Washington, D. C. (4-7-21)

FORESTRY GRADUATE, age 30, several years experience in forest work, including city forester, landscape development, portable logging, reforestation, knowledge and experience in farming and farm machinery. At present employed along technical and administrative lines. Will be open near future for responsible position, preferably in development and management of private forest or estate. Box 2070, care AMERICAN FORESTRY Magazine, Washington, D. C. (4-7-21)

YOUNG MAN with master's degree in forestry and who also has had experience in city forestry, tree surgery, and esthetic forest planting desires a position in any phase of forestry—logging, lumbering, forest management, or city and esthetic forestry—where marked ability will bring advancement. Would also consider a position as part time instructor in botany, the remaining time as city forester. Have taught botany while a graduate student in one of the foremost universities in America. An ex-officer of the World War. Address Box 2080, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITION WANTED by graduate forester, veteran 10th Engineers, at present lumber inspector Pennsylvania System, experience in French forests, Southern Pine and Northern Hardwoods. Desire position as forester for private estate or other work. North preferred. Address Box 2085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-21)

POSITIONS OPEN

WANTED—Assistant State Forester. State of Maryland. Apply to State Employment Commission, 22 Light Street, Baltimore, for full information and application blanks.

WANTED—An assistant forester. Good place offered for a recent graduate who would like to get in business for himself in an excellent location. Address Box 920, AMERICAN FORESTRY MAGAZINE. (8-10-20)

A BOOK ON ANGLING

By FRANCIS FRANCIS. With an introduction by Sir Herbert Maxwell, Bart. A book that cannot fail to quicken the pulse of every fisherman. Angling from every angle, with a vast fund of piscatorial information and the living spirit of the great outdoors. It will also give the fisherman reader many a thrilling picture during winter nights when he must perforce dream of the days of sport to come. Numerous explanatory plates (8 in color). Octavo.....\$4.50

way are taken up in the order in which they come into view along the road. The second half of the book entitled "Trails of Yosemite" will be a delight to those who fare forth to do their sightseeing on foot. In all, twenty-five trail trips are described and as with the roads all points of interest are described in the order in which one comes to them on the trail. Items of historical interest and entertaining bits of description will be a delight to the traveler and insure his seeing and knowing something about all the features of the valley while a numbered diagram and an excellent contour map of the region are finishing touches which make the little volume a most useful and readable trail companion.—Woodbridge Metcalf.

THE ANNUAL MEETING

THE annual meeting of the American Forestry Association was held in Washington, D. C., on Friday, February 25, 1921, over two hundred members attending:

The following were elected officers: President, Charles Lathrop Pack, re-elected; treasurer, Charles F. Quincy, re-elected; directors, Standish Chard, re-elected; Addison S. Pratt, re-elected; W. R. Brown, re-elected; N. C. Brown, re-elected; Elbert F. Baldwin and John Hays Hammond.

The meeting adopted by a vote of 121 to 25 the recommendations of the Board of Directors for amendments to the by-laws providing:

For increasing the subscribing membership dues from \$3.00 to \$4.00 a year.

For a Board of Directors consisting of fifteen members, seven of whom—W. R. Brown, H. H. Chapman, Dr. Henry S. Drinker, C. W. Lyman, Charles Lathrop Pack, C. F. Quincy and E. A. Sterling—shall be permanent members, and eight others, four being elected annually to serve the terms of two years.

For the nomination by the Board of Directors of elective candidates for the Board and provision for other nominations by members.

For the election of the elective directors by vote of members present at the annual meeting and by the mail vote of those not present.

For the election of the president, vice-presidents, treasurer and secretary by the Board of Directors.

For the amendment of the by-laws, except as to the selection of permanent directors, either by the Board of Directors or by members.

For annulment of membership of members in arrears in dues for one year.

Reference is made in an editorial on the first page of this issue to the great value to the Association of the amendments providing for seven permanent directors and for empowering voting by mail or in person for elective directors.

WEST VIRGINIA PULP AND PAPER COMPANY

200 Fifth Avenue
NEW YORK

Western Sales Office
732 SHERMAN STREET - - CHICAGO, ILL.

This Company has for a number of years practiced progressive methods in fire prevention. It urges an extension of this feature of forest policy.

Reforestation has also been a part of this general policy. It now advocates a sane forestry program consistent with the economic operation of timber properties.

DAILY CAPACITY

Over 1200 Tons of Pulp and Paper.

MILLS

Mechanicville	-	-	-	-	-	-	New York
Piedmont	-	-	-	-	-	-	West Virginia
Luke	-	-	-	-	-	-	Maryland
Covington	-	-	-	-	-	-	Virginia
Tyrone	-	-	-	-	-	-	Pennsylvania
Williamsburg	-	-	-	-	-	-	Pennsylvania
Cass	-	-	-	-	-	-	West Virginia
Spruce	-	-	-	-	-	-	West Virginia

Goldsboro N. C. Pine

possesses all of the qualifications that have made N. C. Pine the favored building material in the East since the days of the Pilgrims. We've steadfastly upheld its quality through perfect milling and careful grading; and the modern equipment of our mills today, together with vast holdings of virgin timber, insure you a quality of lumber for many years to come in every way up to the past standards of "Goldsboro N. C. Pine."

TELECODE USED

JOHNSON & WIMSATT,
Washington, D. C.

THE PULP AND PAPER TRADING CO.

21 East 40th Street New York City

**DEALERS IN DOMESTIC CHEMICAL
AND MECHANICAL PULPS AND
PAPER**

AGENTS FOR

J. & J. Rogers Company, Ausable Forks, N. Y.
Procter & Gamble Distributing Co.
Mills at Augusta, Georgia and Memphis, Tenn.
Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
EASTERN AGENTS for Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co.,
Port Huron, Mich.

Established 1905

STERLING LUMBER CO.

GULF RED CYPRESS

Long Leaf Yellow Pine, West Coast
Products. Write Us.

Finance Building, Philadelphia

"Before

You Leave

A Camp Fire

Be Sure It's Out."

Craig-Becker Company, Inc.

52 Vanderbilt Avenue
New York City

**Bleached, Easy Bleaching,
Unbleached Sulphites,
Spruce and Poplar
Ground Wood Pulp**

DOMESTIC EXPORT

CANADIAN DEPARTMENT

(Continued from page 258)

making the profession of forester or forest engineer, a closed one. That is, no one will be allowed to practice as a professional forester or to call himself a forester or forest engineer who has not a diploma from the Forest School of Laval University. Those already in practice who have such a diploma, or a diploma from some extra Quebec forest school and four years practice in Quebec or having no diploma but six years practice in Quebec will be allowed to register and become members of the Quebec Association of Forest Engineers. This would put the foresters on the same footing as men in the other professions, but would be obviously unfair to other institutions granting degrees in forestry. McGill University has protested against the passage of the bill, and the Canadian Society of Forest Engineers, at its annual meeting, went on record as opposing making forestry a "closed" profession. The bill will probably pass, but it is greatly to be hoped, with important modifications.

LOCUSTS RECLAIM WASH LANDS

(Continued from page 253)

will soon realize its forests are one of its greatest resources, that it needs a real department of forestry, and that an appropriation to carry on the work of such a department will be a profit-paying investment.

A great change is wrought in just two or three years by the planting of locusts; but one has himself to see the eroded and reclaimed lands fully to appreciate it. To stand on the edge of one of these waste places, look down into its red depths, and note how the soil above its head and along its sides is all the time falling into it to be swept away; and then to come back in two or three years and see the same area a sheet of rich-hued living green, a beauty spot instead of a scar on the landscape, and to realize that it is now growing good hard dollars for its owner every year and also lessening the danger of washing to the fields above and below it—to see such change as this with one's own eyes is to begin to realize the importance of this work, and also something of what the trees we have often so wilfully and wastefully slaughtered mean to the preservation of our fields and to our prosperity as a people.

WHY NOT LABEL TREES

(Continued from page 249)

the nuts, which look like beautifully polished mahogany.

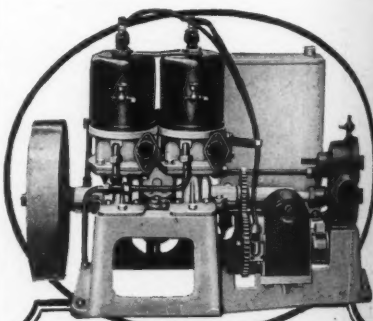
On the short unnamed street facing Daniel Webster's statue, between Rhode Island

and Massachusetts Avenues, Sixteenth and Seventeenth Streets, there are Kentucky coffee trees. In Farragut Square there is a symmetrical yellow-wood tree that looks like a cross between a beech and a locust. There is an avenue of ginkgo trees on Thirteenth Street, leading to the Agricultural Department. The leaves of the ginkgo tree look like the leaves of a maiden-hair fern. The fruit is much sought after by the Chinese. "A word to the wise is sufficient." Do not put the fruit in your pocket for the stone is covered with a soft pulp which, when crushed, is evil-smelling.

From an educational standpoint it is urged that the trees in Washington and also in other cities be labeled both with the botanical and with the common names.

THE "FOREST OF THE STATES"

THE Pennsylvania Department of Forestry has shipped a white ash tree, six feet high, to the Chamber of Commerce, Los Angeles, California. The white ash tree will be Pennsylvania's contribution to "The Forest of the States" that is being established on the Pacific Coast. It was grown by District Forester T. Roy Morton in the Greenwood Forest Tree Nursery, in Huntingdon County.



FAIRBANKS-MORSE

Forest Fire Pumping Outfit

Portable, Lightweight Direct-Connected Gasoline Engines and Pumps For Fire Fighting

USED by the Canadian Government and the Canadian Pacific Railway. Will throw water to a height of 112 feet. Shipment complete, ready to run. Can be quickly moved to any endangered section by auto, pack horses or boat. Write for Bulletin H-7013.

CONTRACTORS' EQUIPMENT DEPT.

FAIRBANKS, MORSE & CO.
30 CHURCH ST. - NEW YORK CITY

BALTIMORE OFFICE
115 East Lombard St.

BOSTON OFFICE
245 State Street

PHILADELPHIA OFFICE: 917 Arch Street



W. M. Story, superintendent of Briarbank, Birmingham, Mich.



A view of Briarbank, the beautiful estate of W. T. Barbour, at Birmingham, Mich. It has been the privilege of Davey Tree Surgeons to assist in the preservation of the fine trees of this estate



An example of the difficult and highly technical work done by Davey Tree Surgeons at Briarbank. Notice extensive filling and mechanical bracing.



JOHN DAVEY
Father of Tree Surgery

W. M. Story's tribute to Davey Tree Surgery

Birmingham, Mich.

The Davey Tree Expert Co.,
Kent, Ohio.

Dear Sirs:

The work done by your company at Briarbank has proven very satisfactory and has helped to preserve a good many of the beautiful trees on the estate which were fast going to decay. I want also to congratulate you on the class of men you have sent here to do work. They have proven themselves gentlemen in every respect—were very energetic and seemed to take great pride in not only doing their work well but would at all times try and finish a job in the least possible time.

Yours very respectfully,

W. M. Story, Supt. Briarbank.

Every gardener and estate superintendent has a most important work in the saving of the trees under his care.

Davey Tree Surgery brings to his aid the highest development of science plus a generation of experience. A careful examination of your trees will be made by appointment.

THE DAVEY TREE EXPERT CO., Inc., 2104 Elm Street, Kent, Ohio

Branch offices with telephone connections: New York City, Astor Court Bldg.; Chicago, Westminster Bldg.; Philadelphia, Land Title Bldg.; Boston, 19 Pearl Street, Wakefield; Baltimore, American Bldg.; St. Louis, Central National Bank Bldg. Write nearest office.

Permanent representatives available in districts surrounding Boston, Springfield, Lenox, Newport, Hartford, Stamford, Albany, Poughkeepsie, White Plains, Jamaica, L. I., Montclair, New York, Philadelphia, Harrisburg, Baltimore, Washington Richmond, Buffalo, Toronto, Pittsburgh, Cleveland, Detroit, Cincinnati, Kansas City, Louisville, Indianapolis, Chicago, Milwaukee, St. Louis. Canadian address, 252 LaGauchiere West, Montreal.

DAVEY TREE SURGEONS

Every real Davey Tree Surgeon is in the employ of The Davey Tree Expert Co., Inc., and the public is cautioned against those falsely representing themselves. An agreement made with the Davey Company and not with an individual is certain evidence of genuineness

DREER'S 1921 GARDEN BOOK

Better than ever, both in illustrations and text and offers the best varieties of Vegetables and Flowers.

A large book, illustrated in colors and photo-engravings showing the true form of varieties offered, in Vegetable and Flower Seeds, Lawn Grass and Agricultural Seeds, Plants of all kinds, including the newest Roses, Dahlias, Hardy Perennials, etc., with cultural information written by experts.

Write today for a copy which will be mailed free if you mention this publication.

HENRY A. DREER

724-716 Chestnut St. Philadelphia, Pa.



TREE AND SHRUB SEEDS

Domestic and Imported
"QUALITY FIRST"
Price List on Request
Special Quantity Prices

OTTO KATZENSTEIN & CO.

Tree Seedsmen
ATLANTA, GEORGIA
Established 1897

LEWIS & VALENTINE CO.,

Largest organization for landscape work

47 West 34th Street, New York

Rye, N. Y.; Roslyn, L. I.; Charlotte, N. C.;
Ardmore, Pa.; Palm Beach, Fla.; Detroit, Mich.;
Havana, Cuba.

TREES FOR FRANCE DIE

THE Department of Forestry of Pennsylvania has been notified that the 1,000,000 white pine trees shipped to France to reforest the devastated regions of that country died before they could be unloaded from the vessel and had to be dumped into a French harbor. Word has come from the United States Department of State, which co-operated in the project with the Department of Forestry, that shipping congestion in the harbor prevented the cargo being removed from the ship before the trees' roots died because of lack of moisture.

The Department of Forestry sent the seedlings as a gift to the French government. They were grown in the Mont Alto and Caledonia forest tree nurseries.

COMMUNITY CAMPS ON THE NATIONAL FORESTS

MANY western communities are recognizing the recreational resources of near-by National Forests as one of their greatest assets and privileges, according to Colonel Greeley, Chief of the Forest Service, and are establishing community camps under more or less formal organization. These camps take every form from the municipal vacation camps erected on the Angeles National Forest under permit from the Forest Service and maintained and managed by the city of Los Angeles, to the improvement of some favorite picnic ground in the National Forests by local citizens in co-operation with local forest officers. The picnic camps are improved by the construction of fire places, rustic tables and seats, and are made available to the public without any charge. The vacation camps under municipal direction charge merely the ex-

pense of feeding and caring for the successive groups of city people who enjoy their privileges.

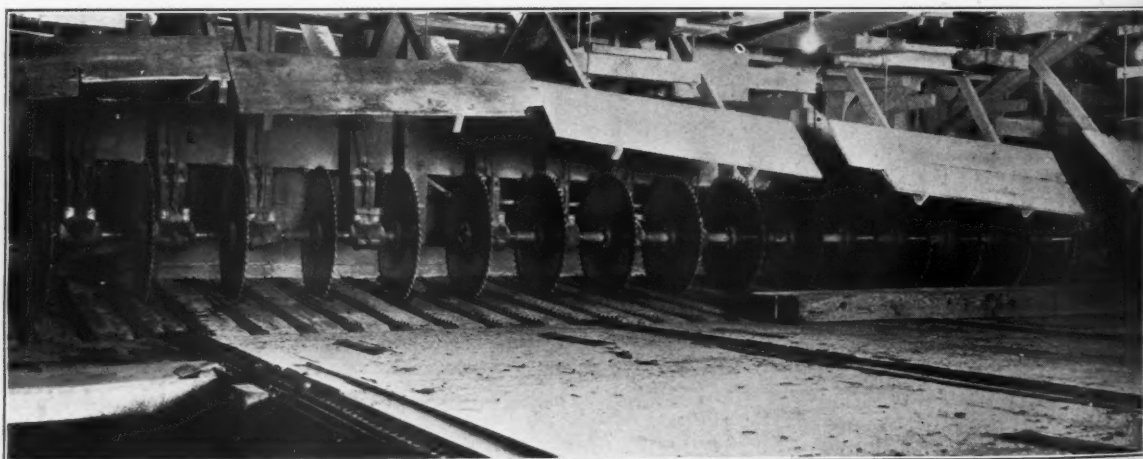
The growth of the recreational resources of the National Forests is so rapid that specially-trained men are needed to direct and plan for the most effective development of this service, Colonel Greeley states. Any expenditure along these lines will be good business for the Government, since the increased receipts will return to the Treasury much more than the total amount expended.

The protection of wild life and the recognition of the National Forests as natural breeding grounds of fish and game is closely related to the development of the recreational resources. To make more effective the work of game protection, in co-operation with the State and local authorities, and to secure better development of the fish and game resources of the National Forests, Colonel Greeley believes that Congress should make provision for the establishment of game sanctuaries, within which wild life may find security. These sanctuaries, he says, should be relatively limited in area but should be established in considerable number.

MID-WEST WOOD TURNERS ORGANIZE

THE Charter Convention of the Mid-West Association of Wood Turners was held at Congress Hotel, Chicago, February 15. This association is a newly organized branch of the National Association of Wood Turners.

The convention completed the formation of the Mid-West Association, adopted constitution and by-laws, and elected officers for the ensuing year.



Sixteen 42-inch inserted Tooth Cut-off Saws operating on one slasher rig is probably the record number of this type of saw doing business in the world. These saws are operating daily in the mill of the Crown-Williamette Pulp & Paper Company, of Oregon City, Oregon. They are 42 inches in diameter and six gauge, and were selected from regular Simonds stock.

As there was no mill at that time that had a complete slasher rig made up of inserted tooth cut-off saws, these 16 were selected for a trial by the Crown-Williamette Company. They at once justified their selection and gave excellent results.

Through the courtesy of the Crown-Williamette Company, we are privileged to reproduce the illustration showing these 16 Simonds Saws in operation.

PULPWOOD STATES SHOW INCREASED PRODUCTION

PULPWOOD consumption by mills in New York, New England, and the Lake States was 17.7 per cent greater in 1920 than in 1918, according to incomplete returns received by the Forest Service, United States Department of Agriculture. The estimate is based upon a comparison of the output of 118 identical mills, representing about 41 per cent of the total consumption in these States. Should this percentage of increase hold true for the remaining mills, the total consumption for the past year would equal 6,180,000 cords, and exceed the previous maximum of 1917 by 700,000 cords, or nearly 13 per cent.

The production of 1,553,978 tons of wood pulp reported by the 118 mills exceeded the 1918 production by 17.5 per cent, and indicates a 1920 output of approximately 3,894,000 tons, which would exceed the 1917 record production by 384,000 tons or 10.9 per cent.

This is the first preliminary statement by the Forest Service in connection with the study of pulpwood consumption now being carried on in co-operation with the American Paper and Pulp Association and the Census Bureau.

CONFERENCE OF WOOD-USERS

REPRESENTATIVES of the leading wood-using industries in Pennsylvania will be invited by Governor Sprout to attend a conference in Harrisburg on April 13 and 14. They will be called together to discuss the present timber supply and to consider probable sources of future supplies. It will be the first meeting ever held by Pennsylvania business men who must depend largely upon forest products for the continuation of their industries.

Gifford Pinchot, the State's Chief Forester, is working with Governor Sprout in preparing the preliminary plans for the meeting. It is expected that between 250 and 300 industries that use wood will be represented. During the two-day sessions it is planned to bring out reliable figures on the outlook for timber and its allied products in Pennsylvania. It is believed by Forester Pinchot that facts will be pre-

FORESTRY SEEDS

Send for my catalogue containing full list of varieties and prices

THOMAS J. LANE

Seedsman

DRESHER - - - PENNSYLVANIA

TREE SEEDS

Large collection of Evergreen, Tree, Shrub and Hardy Perennial Seeds from all parts of the world.

Send for Catalogue.

CONYERS B. FLEU, Jr.

6223-24-32 Ross Street
GERMANTOWN - - - PHILADELPHIA

How Hicks Can Help In Your Garden Plans

IF YOU are the owner of a place that has old trees and shrubs, you will enjoy adding rare and unusual specimens to the collection. Hicks Nurseries have all the new introductions—dwarf Evergreens, cover plants, berry-bearing and flowering shrubs.

IF You have a new place without plantings, Hicks Nurseries have Time-Saving Trees (25 feet and more high) that will give character to any planting. They can be shipped hundreds of miles and are guaranteed to grow.

IF THE highway is noisy and dusty, a wall of green will give privacy and quiet. Hicks Nurseries have Evergreens (3 to 10 or more feet tall) which will give immediate results, and save five or ten years of waiting.

"Home Landscapes"

our book for home-owners, gives plans and suggestions for unusual groupings of trees, shrubs, and plants on small home grounds and large estates. Sent free on request.

HICKS NURSERIES

Box F

Westbury, L. I.,

New York

EVERGREEN SEEDLINGS

We are equipped to grow EVERGREEN SEEDLINGS in million lots on contract, for REFORESTING PROJECTS. All standard varieties grown by experts. We save you money. Write for information.

THE D. HILL NURSERY CO., INC.

Evergreen Specialists—Largest Growers in America.

Box 501

Dundee, Illinois, U. S. A.

TREES FOR FOREST PLANTING

PINE :: SPRUCE

CONIFERS ONLY

Write us for price list

KEENE FORESTRY ASSOCIATION,
KEENE, N. H.

Save Time in Sorting and Routing Mail, Memos, Orders, Etc.

without changing your present system; Kleradesk sorts and routes papers automatically—instantly. It has separate compartments for all to whom mail is distributed.

Kleradesk

Holds for Reference or Distributes

It saves time—keeps desks clean—avoids confusion—occupies but one-tenth space of wire baskets—eliminates endless shuffling of papers to find the paper you want. A Kleradesk provides a convenient place for holding reference papers where they will be out of the way but immediately at hand when needed.

Built of Steel Sections

Each compartment is adjustable from one inch to 1½ inches in width. Any number of compartments can be added as required. Indexed front and back. Prices quoted under illustrations are for standard olive green finish. Floor sections for 3, 6 and 10-inch compartments supplied at extra cost, as well as mahogany and oak finishes.

Pays for Itself

A Kleradesk guarantees time saved in locating papers, increased efficiency, personal convenience and the refined appearance of orderly desks, from president to office boy.

The prices under illustrations are for standard Kleradesk models in Olive Green. Order one today. Being sectional, you may later add to or alter it. We guarantee complete satisfaction.

Ross-Gould Company

232 N. 10th St., St. Louis

New York, Cleveland

Philadelphia

Chicago

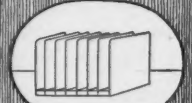
Write at once for free, instructive, illustrated folder, "How to Get Greater Desk Efficiency."



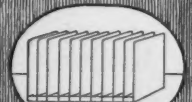
2 COMPARTMENT \$1.20



4 COMPARTMENT \$6.00



7 COMPARTMENT \$9.00

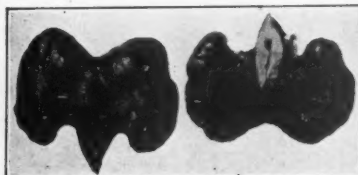


10 COMPARTMENT \$13.00



The Black Walnut is one of America's most useful trees.

American Forestry (December, 1920, issue)



We are headquarters for Black Walnut and other nut trees

Black Walnut is one of the most valuable nut trees grown, its timber being highly prized for furniture, interior furnishings, automobiles, sewing machines, firearms, and the like. The wood is a rich dark brown, very durable, hard, strong and splits easily; takes a fine polish. In addition to its importance as a timber tree, however, the round rough nuts furnish rich, meaty kernels which sell at high prices.

Black Walnuts
Make That Poor Land Pay

Absolutely hardy, growing and bearing under adverse conditions, the American Black Walnut surpasses all other varieties of nuts in point of hardiness. From Canada to the Gulf of Mexico, the Black Walnut will thrive and after the first few years requires little attention, making a rapid, sturdy growth and soon producing an addition to the owner's income without operating expense.

For roadside planting or for reforestation large areas, we have extensive plantings of these valuable trees to offer at the following attractive prices: 3-4 ft., 75c each, \$3 per dozen, \$6 per hundred; 6-8 ft., \$1.25 each, \$12 per dozen, \$90 per hundred; extra large trees, 8-10 ft., \$3 each, \$30 per dozen, \$200 per hundred.

GLEN BROS., Inc.,

Est. 1866

ROCHESTER, N. Y.



SHRUBS

Deciduous and Ornamental

THE seemingly uninteresting and monotonous spots about the grounds can be easily transformed into a haven of artistic beauty, by the careful arrangement of appropriate shrubbery.

And, as now is the proper time for their planting, our service department's experts suggest:

WEIGELA (In variety)
VIBURNUM-SNOWBALL
FLOWERING ALMOND
SWEET PEPPER BUSH
BUSH HONEYSUCKLE
STRAWBERRY SHRUBS
MOCK ORANGE
PEARL BUSH
RUSSIAN OLIVE
HYDRANGEA
DEUTZIA
SPIRAEA

GOOD STRONG SHRUBS

50c. each or \$5.50 a dozen

FRENCH HYBRID NAMED LILACS

All excellent specimens

SPECIAL! 75c. each or \$7.50 a dozen

We earnestly wish that all those sincerely interested in "better grounds" consider the services of the experts who make up our service department, at all times at their disposal, whether they are customers or not.

New Catalog Gratis

"Successful for over a Century"

AMERICAN NURSERIES

SINGER BUILDING

NEW YORK



**RARE
ORIENTAL
FLOWERING
TREES**

*Catalogue
in color*

PLANT MEMORIAL TREES

PLANT FULL GROWN TREES
And Save a Lifetime
of Waiting for Small
Trees to Grow
**LEWIS & VALENTINE
COMPANY**

47 W. 34th St. New York

Ardmore, Pa. Red Bank, N. J.

Rye, N. Y. Roslyn, L. I.

Charlotte, N. C. Detroit, Mich.

sented showing that the threatened timber shortage is rapidly becoming acute. Practical methods of providing for a certain future timber supply will be considered.

Some of the topics scheduled on the tentative program are: The Forest and the State, by Governor Sproul, who will open the meeting; Where Our Timber Comes From, The Forest and the Railroad, The Forest and the Farm, The Forest and the Town, The Forest and the Press, The Forest and the Factory, The Forest and the Mine, The Forest and Labor, The Forest and the Food Supply, and Why We need the Forest.

GEORGIA WOMEN TO STUDY FORESTRY

THE Woman's Club, of Fitzgerald, Georgia, has earnestly taken up the subject of forestry, and intends, through study along practical lines to fully acquaint itself with the situation so that it may be of real assistance in forwarding the movement for the preservation and renewal of our forests.

At a recent meeting, strong resolutions were passed by the Club urging the importance of conservation, and stressing the "planting of black walnut trees for their beauty and utility, and such other trees as are approved by the American Forestry Association of Washington, D. C."

EASTERN NATIONAL FORESTS

THE National Forest Reservation Commission at a meeting held February 25, approved the purchase of 58,853 acres of land in the White Mountains, southern Appalachians and Arkansas at an average price of \$4.70. These lands consist of 2 tracts amounting to 410 acres in New Hampshire; 3 tracts aggregating 969 acres in Tucker and Hardy Counties, West Virginia; 14 tracts totaling 38,056 acres in Augusta, Rockingham, Shenandoah, Rockbridge, and Amherst Counties, Virginia; 3 tracts with a combined area of 8,745 acres in Johnson, Unicoi, and Green Counties, Tennessee; 11 tracts amounting to 387 acres on the Boone and Mt. Mitchell purchase units, in Avery, Caldwell, Burke, and McDowell Counties, North Carolina; 5 tracts totaling 698 acres in Rabun County, Georgia; 45 tracts aggregating 6,283 acres largely in Montgomery, Polk, Scott, Yell, Pope, Stone, Newton, and Johnson Counties, Arkansas; and 19 tracts in Lawrence and Winston Counties, Alabama, having a total area of 3,305 acres.

ELECTRICITY AND TREES

IT is desired to make clear, in connection with the note on page 107 of the February issue of AMERICAN FORESTRY, that electric wires do not kill trees unless a strong current is brought into direct contact with the main stem, though a branch may be killed either by the escape of current through a worn insulation when the wood is wet, or by burning.

ROADSIDE PLANTING ENDORSED

THE effort being made to secure nationwide planting of roadsides is receiving strong support in the State of New York, according to reports made by C. F. Bley, of Hamburg, a member of the New York State Conservation Association. Mr. Bley says that the proposition has recently been endorsed by the president of the American Farm Bureau Federation, which is a good indication of interest on the part of the farmer element, and should go far toward making it a success. While primarily the objective of the plan is scenic beauty, and added comfort in travel as well as protection of the road-bed, its consummation is far-reaching. The wholesome influence of roadside planting needs no emphasis, and this movement to plant systematically suitable forest and edible nut-bearing trees on all public roadsides should receive cordial support. The trees to be planted under the plan would equal the planting of nine and one-half million acres—or more than fifty per cent of the area of virgin forest still remaining in the United States, says Mr. Bley. Opposition to the plan is bound to be met with in many sections, but Erie County, New York, has gone on record unequivocally in favor of the plan by the passage of a strong resolution endorsing it, which it is proposed to submit to every Board of Supervisors in the State for action.

"GROVE OF THE STATES"

THE Los Angeles Chamber of Commerce is establishing in Exposition Park in Los Angeles, California, a grove of trees representative of each of the States of the Union. Through Governor Davis, a request for Idaho to furnish a suitable tree for this grove was recently received by the School of Forestry of the University of Idaho, and a young Idaho white pine 3 feet high and 6 years old was immediately dispatched on its way to represent Idaho in the Los Angeles Park. The School of Forestry has in its arboretum well grown specimens of all the native trees of the State of Idaho as well as more than 100 species from other sections and so was able to furnish at once a tree which would be especially fitted for this purpose, for the trees grown in the arboretum are much better able to withstand transplanting and transportation to a distant State than wild specimens.

The Idaho white pine (*Pinus monticola*) was selected as being the most representative one of Idaho because Idaho possesses the only large body of timber of this species, the lumber from which is marketed throughout the United States and commands a higher price than any other coniferous wood. The people of the State may be proud of the tree which will bear the name of Idaho for coming generations among the representative trees from every other State of the Union at Los Angeles.

AMAWALK TREES

are not dug until just before they are to leave the Nursery. If the trees are to be delivered by truck, they are dug in the morning, loaded on the truck in the afternoon, and delivered as early as possible the next morning. When the order is to be shipped by freight, the trees are not dug until the freight car is on our siding. The greatest care is taken in the digging and handling of our trees, so as not to injure either the root system or the branches. Our most experienced men are in charge of the digging, the balling and the loading of the trees. In loading a freight car, the trees are placed in the car as soon as they are dug; the roots are then covered with straw and soaked with water. This is to prevent the roots from drying out.

Maples.....	16 to 35 ft.
Oaks.....	16 to 35 ft.
Beech.....	12 to 25 ft.
Pines.....	10 to 20 ft.
Spruce.....	10 to 22 ft.

Our catalogue contains considerable information in regard to planting

THE RIGHT TREE
IN THE RIGHT PLACE

We will be glad to furnish you with any information at our command concerning silviculture.



An Amawalk tree as received and ready for planting. An illustrated booklet of detailed instruction in the planting and care of trees is sent with each consignment.

AMAWALK
NURSERY

New York City Office, 103 Park Avenue
Telephone: VANDERBILT 7691

Amawalk, Westchester Co., New York
Telephone: YORKTOWN 123

BRECK-ROBINSON NURSERY CO.

TREES - PLANTS - PLANTING

BOX E, LEXINGTON, MASSACHUSETTS

Orchids

We are specialists in Orchids; we collect, import, grow, sell and export this class of plants exclusively.

Our illustrated and descriptive catalogue of Orchids may be had on application. Also special list of freshly imported unestablished Orchids

LAGER & HURRELL

Orchid Growers and Importers SUMMIT, N. J.

Nursery Stock for Forest Planting

TREE SEEDS

SEEDLINGS

Write for prices on large quantities

TRANSPLANTS

THE NORTH-EASTERN FORESTRY CO.
CHESHIRE, CONN.

335,000,000 Cubic Feet National Forest Timber and Pulpwood FOR SALE

Location and Amount—All the merchantable dead timber standing or down, and all the live timber marked or designated for cutting on an area embracing about 150,000 acres on the west side of Admiralty Island, extending from Young Bay on the northeast side of the island across to the head of Hawk Inlet, and thence southerly along the west side of the island to Kootsnaahoo Inlet and Mitchell Bay, Tongass National Forest, Alaska, estimated to be 335,000,000 cubic feet approximately equivalent to 3,350,000 cords, more or less, of Sitka spruce, hemlock and other species of timber, approximately 85 per cent hemlock.

Stumpage Prices—Lowest rates considered, \$.60 per 100 cubic feet for Sitka spruce and Alaska cedar and \$.30 per 100 cubic feet for hemlock and other species. Rates to be readjusted every five years.

Deposit—With bid \$10,000, to be applied on the purchase price, refunded, or retained in part as liquidated damages, according to the conditions of sale.

Final Date for Bids—Sealed bids will be received by the District Forester, Portland, Oregon, up to and including June 30, 1921.

The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Portland, Oregon, or the District Forester, Ketchikan, Alaska.

FOREST SCHOOL NOTES

SCHOOL OF FORESTRY, UNIVERSITY OF IDAHO

THE School of Forestry of the University of Idaho, at Moscow, offers a correspondence course in Lumber and Its Uses. That the course is meeting a real need is attested by the large number of students that have registered for it since it was first announced about three years ago. Some thirty different States are represented in the enrollment.

The course is designed to be of special value to lumber dealers, lumber salesmen, contractors or builders, carpenters, manual training teachers, and others connected with the wood working industries. The fee is a nominal one and includes the text book and all reference material.

The course consists of twelve assignments covering such topics as the structure and physical properties of wood, lumber grading, structural timbers, seasoning and preservation of wood, lumber production and the selection and use of materials.

A prospectus will be sent on application to the School of Forestry, University of Idaho, Moscow, Idaho.

THE Forestry Club of the University of Idaho recently had the unusual opportunity of hearing Mr. Norman F. Coleman, President of the Loyal Legion of Loggers and Lumbermen, outline the present situation in the lumber industry of the northwest, point out its relation to the industrial problem and explain how the Four L's were handling the different conditions of the present. Mr. Coleman has been making a tour of the lumber mills of the Inland Empire.

A class of log scaling was recently opened by the Idaho State Board for Vocational Education at the plant of the Edward Rutledge Timber Company at Coeur d'Alene, Idaho. Mr. C. E. Knouf, log scaling expert with the United States Forest Service in the Inland Empire, for eleven years, has been secured as instructor and is well qualified by his long experience to handle this work efficiently. No charge is made for the course and attendance of both experienced and inexperienced men will be welcome. The course will run for six hours a day and will cover approximately three weeks' time. It will include instruction in all phases of log scaling, together with study of the causes underlying various types of defects for which allowance has to be made in woods practice.

FOUR CHINESE FORESTERS AT YALE

THE senior class of the Yale School of Forestry is now in spring field training in the South which has been the feature of the senior year since 1907. This year

the class will be located at Urania, Louisiana, west of the Mississippi, on the forest estate of Henry Hardtner, whose experiments in forest restoration have attracted wide attention in the South for their success. Nine seniors will take the course. An unusual feature this year is the presence of four Chinese students in the graduating class; namely, Mark Yuen-chi Hwang, Shun-Ching Lee, Peng Fei Shen, and Chuan Fah Yao, who was recently elected to the Yale Chapter of Sigma Xi. These men will return to China after the completion of the three months' course, to take up various lines of forestry work in their home provinces. Placido O. Dacanay, who came to Yale from the Philippines to complete his training after a term at the University of Montana, will enter the Government Service of the Islands.

The men live in tents fitted with board floors and walls, and receive final instructions in the art of topographic mapping, the "estimating" or measurement of standing timber, the methods of studying growth of trees, and of managing forest lands to produce timber crops, methods of logging, the construction of logging railroads, and sawmill practice. Mr. Hardtner, at Urania, is planning to manage his lands in such a way that there will always be timber to cut and the town will always remain prosperous instead of disappearing as many sawmill towns do after cutting is finished. In this project the Yale class will assist by outlining the rate of growth and methods of cutting which will be needed to secure the desired result. The State of Louisiana in 1919, as the direct result of the work and advice of the Yale School, passed the first law ever adopted in the United States, which requires forest owners on cutting their timber to leave seed trees standing on every acre for the purpose of securing reforestation.

UNIVERSITY OF WASHINGTON COLLEGE OF FORESTRY AND LUMBERING

THE College of Forestry and Lumbering opened with an enrollment of 150 students, representing eight countries of the world and practically every State of the Union. Among the recent additions to the student body of the school is Mr. A. M. Koroloff, representing the Bureau of Forestry and several forestry associations of Russian Siberia. Mr. Koroloff is a graduate of the Petrograd Imperial Forest Institute. Thorsten Streiffert, a graduate of the College of Forestry and College of Commerce of Stockholm, Sweden, has lately entered the College of Forestry here to study American methods of forest practice and management.

The Forestry Department of the Province of Queensland, Australia, has sent Mr. C. R. Paterson, a graduate of the University of Queensland, to the University of Washington for the purpose of investigating and learning new logging

Four Reasons Why You Should Buy The Noiseless Typewriter



- 1—It is durable -- --
- 2—It is speedy -- --
- 3—It does beautiful work
- 4—It is noiseless -- --

THREE of the four reasons given above might be called common to any good typewriter. But the fourth is exclusively a Noiseless feature.

It is the feature that sets this wonder machine above and apart from any other and makes it indeed "The Typewriter Plus." After all, in these days of progress, why should any one buy a noisy typewriter?

Sometimes a business man will say that he realizes the value of The Noiseless Typewriter but his only question is—"Will it stand up"?

In answer, we need but point to the thousands of machines that have been in constant daily use for four, five and six years! And to the list of users!

Reasons No. 2 and No. 3 are quite easily demonstrated. As a matter of

fact, stenographers who use The Noiseless Typewriter will tell you that they can do more work and better work on it than on any other machine they have ever used.

The Noiseless Typewriter brings you all the speed and efficiency of the ordinary typewriter and something more—the blessedness of quiet.

And it is on exactly that basis that we commend it to your attention.

As we have frequently stated, a fifteen-minute demonstration will tell you more about its value to you—to your nerves—to your stenographer—and to your business, than we could write in ten pages.

Our representatives stand ready to make that demonstration at any time that suits your convenience.

THE NOISELESS TYPEWRITER COMPANY

253 BROADWAY, NEW YORK

*Sales Offices in Leading Cities of
the United States and Canada*

Send for Illustrated Booklet—"THE TYPEWRITER PLUS"

School of Forestry

UNIVERSITY OF IDAHO

Four Year Course, with opportunity to specialize in General Forestry, Logging Engineering and Forest Grazing.

Forest Ranger Course, of high school grade, covering two years of five months each.

Special Short Course, covering twelve weeks designed for those who cannot take the time for the fuller courses.

No tuition is charged for any of the above courses, and otherwise expenses are the lowest.

Correspondence Course. A course in Lumber and Its Uses is given by correspondence for which a nominal charge is made.

For Further Particulars Address

**Dean, School of Forestry
University of Idaho
Moscow, Idaho**

methods to be adopted in Australia. Official representatives of private forest interests and forestry departments of Chile, Canada, England, and the Philippines are also availing themselves of the opportunities offered at the University of Washington for advanced study of logging engineering, forest management, milling, and for research along the lines of forest products.

Dean Winkenwerder has spent considerable time during the past month in conference with the State Fire Warden and the Land Commissioner on the subject of the purchase by the state of logged-off lands. A bill was drafted, to be put before the legislature now in session, providing for the purchase by the state of logged-over lands. This bill is the entering wedge for a definite state forest policy and it will undoubtedly serve as an effective means of meeting the increasingly serious problem of disposing of logged-over lands. All indications are that the bill will pass the legislature.

FREE TREES FOR RESIDENTS OF NEW YORK STATE

YOUNG trees for reforestation purposes will be shipped from the nurseries of the Conservation Commission during the month of April, according to C. R. Pettis, Superintendent of State Forests. Application blanks for trees are available upon request to the Commission at Albany. Mr.

Pettis advises that those who contemplate reforestation work this spring file their applications as soon as possible, as the supply of trees is limited and it will be a case of "first come first served."

Trees will not be distributed in quantities of less than one thousand of any species. The following species will be available as long as the supply lasts: Scotch pine, three and four year transplants; Norway spruce, three and four year transplants; white spruce, three year transplants; white cedar, three year transplants; black locust, one year seedlings, and Carolina poplar cuttings.

FORESTRY TRAINING

In the Heart of the Rockies

* * *

The Colorado School of Forestry

**A Department of Colorado
College**

Colorado Springs, Colorado

* * *

Four and five-year undergraduate courses and a two-year graduate course in technical forestry, leading to the degrees of Bachelor of Science in Forestry and Master of Forestry.

Forestry teaching in spring and fall at Manitou Forest (a 7,000-acre forest belonging to the School) and the winter term at Colorado Springs.

Write for announcement giving full information.

HOW TO SAVE ONE DOLLAR OUT OF TEN DOLLARS

AND HOW YOU CAN HELP SPREAD EDUCATION IN FORESTRY

It will pay anyone who buys books or magazines either for their own use or their families to become members of the American Forestry Association, for

Only Members of the Association are Entitled to the Privilege

of a ten per cent discount on the publishers' price of all books and magazines if order is placed direct with the American Forestry Association. This service saves you money, worry and trouble. Take publishers' price on one or more books, or on two or more magazines, deduct ten per cent and send check and order to the Association. We will do the rest. *

Make your Association financially better able to fight for legislation to perpetuate our forests, to carry on our work of public agitation and to further our endeavors to provide forest products for our future needs by suggesting for membership some public spirited people you believe interested in forests, in trees and kindred subjects.

American Forestry Association,
Washington, D. C.

Suggested by member:

I suggest the following as eligible for membership:

Name

Address

.....

.....

.....

* AMERICAN FORESTRY is not included in this discount offer.

plate
their
sup-
be a

anti-
any
l be
catch
Nor-
rams-
ants;
Caro-

g
s
y

es
i-
of
a-
at
g-
at
a-